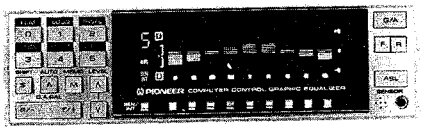
PIONEER

Service Manual



ORDER NO.
CRT1020

COMPONENT CAR STEREO GRAPHIC EQUALIZER

EQ-505

EW,ES

SPECIFICATIONS

General

Power source	DC 14.4V (10.8 – 15.6V allowable)
Grounding system	Negative type
Dimensions	180(W)×50(H)×148(D) mm
Weight	1.2kg

Equalizer

Equalization frequency	60Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 16kHz
Gain	−2 dB
Equalization range	±12 dB
Frequency response	20 – 30,000Hz (±3 dB)
Distortion	0.06% (1kHz, 70mV)
Signal-to-noise ratio	85 dB (IHF-A network)
Input impedance	22kΩ
Output impedance	Less than 1kΩ
Max. output level	200mV/1kHz, 1% THD

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

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CONTENTS

1. NAME OF PARTS AND USE

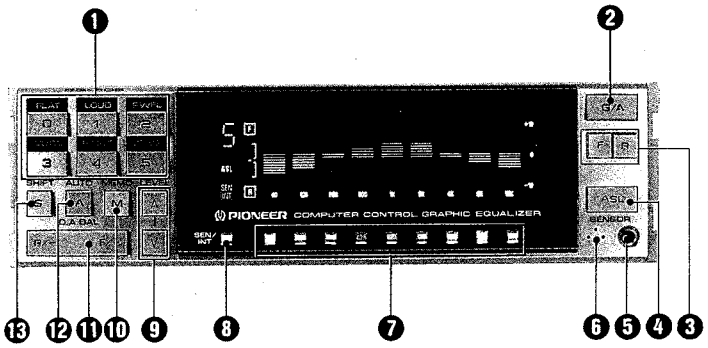


Fig. 1

❶ Equalizer Curve Preset Buttons

Recall any one of the equalizer curves (user preset curves) stored in memories 0 through 5. After the shift button is pressed (factory preset curve indicator lights), used to recall any one of the factory preset curves stored in memories 0 through 5.

❷ Equalizer/Analyzer Button

Switches between the graphic equalizer and spectrum analyzer displays.

❸ Equalizer Front/Rear Buttons

Switch equalizer control function operation between front and rear speakers. Pressing both buttons applies equalizer control function to both front and rear speakers.

❹ ASL (Automatic Sound Levelizer Button)

Activates the ASL function (ASL indicator lights).

❺ Sensor Mike Jack

Used to connect accessory mike when using the auto equalizer function.

❻ Built-In Sensor Mike

Acts as sensor for ASL.

❼ Frequency Select Buttons

Used to enter the level set mode (indicator flashes for 20 seconds) and to select the frequency to be adjusted. (NOTE: Nothing will happen when a frequency select button is pressed if the equalizer button is not depressed.)

❽ Sense/Intensity Button

When ASL is ON, pressed to adjust the sense or intensity level using the sense/intensity control button. Each press switches between the sense and intensity level displays.

❾ Level Up/Down Buttons

Used to adjust graphic equalizer levels. Pressing the upper button raises the level, while pressing the lower button lowers the level. Adjustments are made after pressing the frequency select button to cause the selected frequency to flash. Only the frequency that is flashing can be adjusted.

❿ Memory Button

Causes the display to flash for approximately 5 seconds and stores an adjusted equalizer curve in memory.

⓫ Dual Amp Balancer/Sense/Intensity Control Button

Dual Amp Balancer Control Button

Pressing the F side of the button gradually cuts rear speaker output until sound is only coming from the front speakers. Pressing the R side cuts front speaker output until sound is only coming from the rear speakers.

Sense/Intensity Control Button

Acts as the sense/intensity control button when the sense or intensity display is flashing while the ASL indicator is lit. Pressing the + side increases sense/intensity levels, while pressing the − side decreases them.

⓬ Auto Equalizing Button

Press to perform auto equalizing. Pink noise is emitted from the speakers and the vehicle's internal acoustic characteristics are automatically compensated for to produce flat characteristics at the listening position.

⓭ Shift Button

Switches between factory preset curves and user preset curves. Pressing causes the factory preset curve indicator to light above the equalizer preset button and enables selection of an factory preset curve using the equalizer preset buttons.

• Reading the Displays

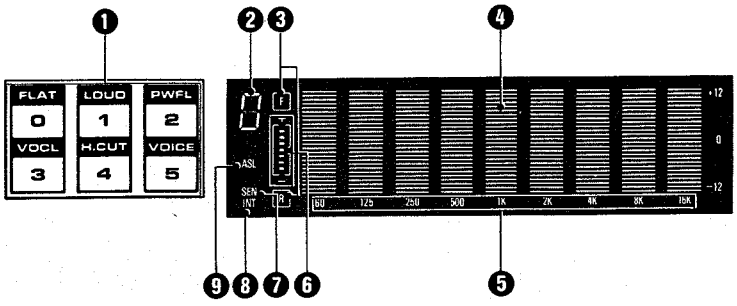


Fig. 2

❶ Factory Preset Curve Display

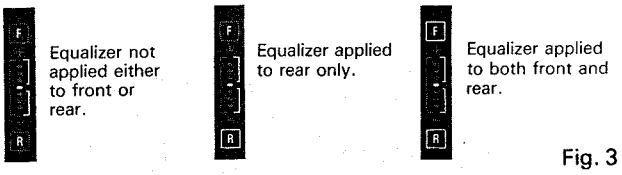
Lights when the shift button is pressed.

❷ Preset Number Display

Displays the number of the button pressed to select a preset equalizer curve.

❸ Equalizer Front/Rear Display

Displays whether the equalizer front/rear button is ON or OFF. The equalizer is OFF when F, R is displayed and ON when [F] [R] is displayed.



Equalizer not applied either to front or rear.

Equalizer applied to rear only.

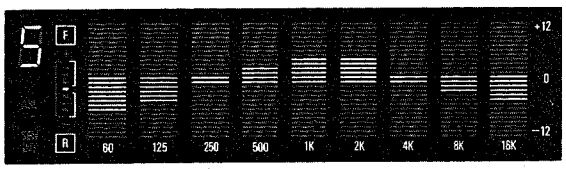
Equalizer applied to both front and rear.

Fig. 3

❹ Spectrum Analyzer/Graphic Equalizer Display

Switches between the spectrum analyzer and graphic equalizer displays with each press of the equalizer/analyzer button. The graphic equalizer display shows the level settings of 9 frequencies. The spectrum analyzer display shows the power level of each frequency.

Graphic equalizer display



Spectrum analyzer display

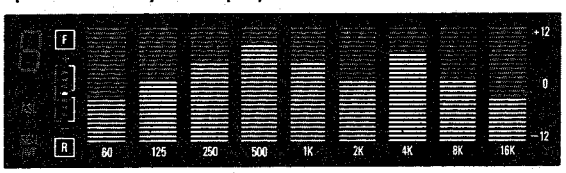


Fig. 4

❺ Frequency Display

❻ Dual Amp Balancer Display

Displays the balance between the front and rear speakers when using a 2-amp/4-speaker system.

❼ Sense Level Display

Displays the sense level during ASL.

❽ Intensity Level Display

Displays the intensity level during ASL.

❾ ASL Automatic Sound Levelizer Display

Lights when the ASL button is ON.

ASL display | **Dual balancer display** | **Sense level display** | **Intensity level display**

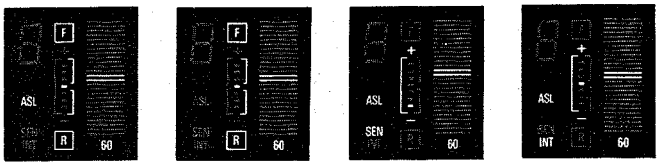


Fig. 5

Factory Preset Curves

Besides being available for storage of user generated equalizer curves, the preset buttons can also be used to recall the following factory preset curves.

[0] FLAT: Flat Curve

A non-compensated equalizer curve that can be used for comparison with other curves to determine their effect.

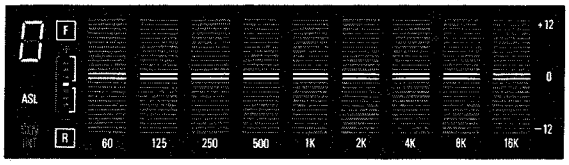


Fig. 6

[1] LOUD: Loudness Curve

Produces the loudness to compensate for the feeling of insufficient high and low ranges when listening at low volumes.

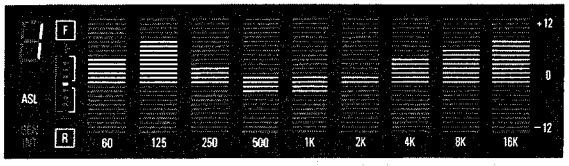


Fig. 7

[2] PWFL : Powerful Curve

Produces a sound with even more compensation for the high and low ranges than the loudness curve.

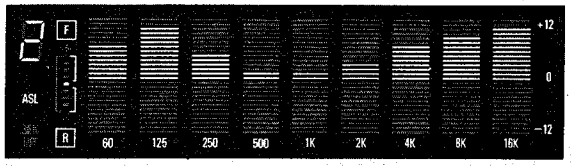


Fig. 8

[3] VOCL: Vocal Curve

Accentuates vocals.

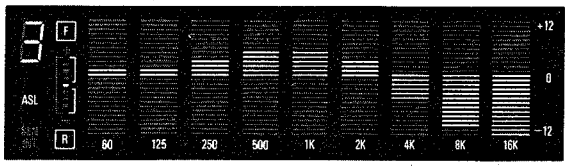


Fig. 9

[4] H.CUT: High Cut Curve

Supresses such high range noise as tape hiss.

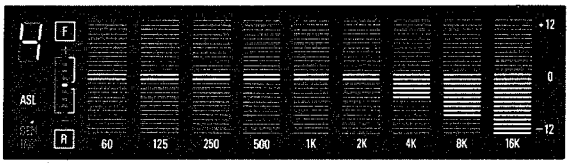


Fig. 10

[5] VOICE: Voice Curve

Used when listening to such voice output as narrations and news.

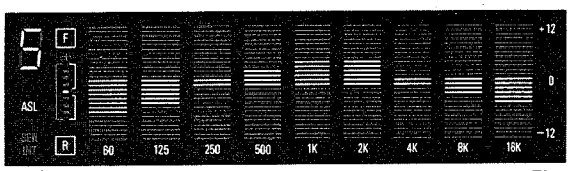


Fig. 11

The following procedure is used to select the desired curve:

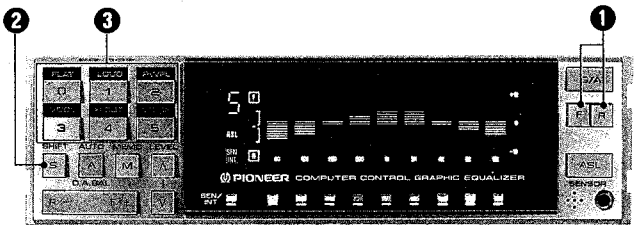


Fig. 12

- Press the equalizer front/rear button ❶ and confirm that either [F] or [R] appears on the equalizer front/rear display. (When using a 2-speaker system, press the equalizer R button.)

1. Press the equalizer shift button ❷ (factory preset curve display lights).

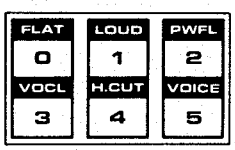


Fig. 13

2. Press the equalizer preset button ❸ that matches the program source.

Forming Equalizer Curves

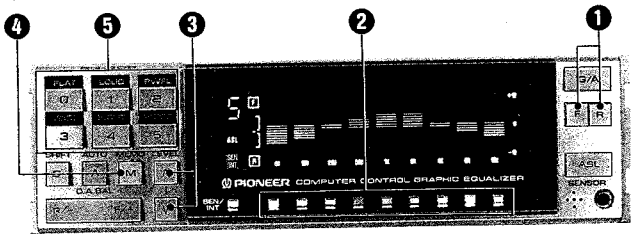


Fig. 14

- Press the equalizer front/rear button ❶ and confirm that either [F] or [R] appears on the equalizer front/rear display. (When using a 2-speaker system, press the equalizer R button.)

1. Press the frequency select button ❷ that corresponds to the frequency to be adjusted. (The indicator of the selected frequency will flash for approximately 20 seconds.)
2. While the indicator is flashing, use the level UP/DOWN buttons ❸ to adjust the frequency to the desired level.

- Repeat steps (1) and (2) to set the other frequencies.

Storing Curves In Memory

Once an equalizer curve is formed, it can be assigned to a preset button and stored in memory by performing the following operation.

1. Press the memory button ❹. (All indicators will flash for approximately 5 seconds.)
2. While the indicators are flashing, press one of the equalizer preset buttons ❺.

- By following the operations outlined above, up to six preset curves can be created and stored in memory.
- Even in the spectrum analyzer display, pressing the frequency select button ❷ switches to the equalizer display. The spectrum analyzer will return shortly (approximately 20 seconds) after adjustments are complete.

Note:

- When 60 Hz components are not included in the program source or when speakers with small diameter opening are used, variations in low pitch tones will not be clearly evident even if the 60 Hz frequency level is adjusted.
- When 16 kHz components are not included in the program source, variations in high pitch tones will not be clearly evident even if the 16 kHz frequency level is adjusted.

Using the Auto Equalizer Function

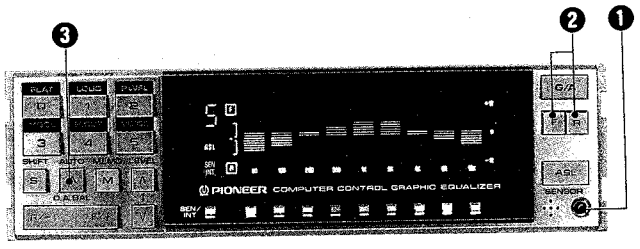


Fig. 15

The auto equalizer function automatically computes and analyzes the specific acoustic characteristics of the vehicle's interior. It then adjusts the characteristics at the listening position to be nearly flat. The resulting curve can then be recorded to an equalizer preset button for recall when desired.

1. Plug the accessory microphone into the sensor mike jack ❶.

Acoustic characteristics vary widely according to the position of the microphone. Locate the microphone as close to the ear as possible.

Fig. 16

2. Press the equalizer front/rear button ❷ followed by the auto equalizer button ❸. Pink noise will be generated from the left speaker, then the right speaker, and then simultaneously from the left and right speakers for about 12 seconds. A high pitch signal will be produced when auto equalizing operations are complete.

- Auto equalizing is limited to when the engine of the vehicle is not running and as little noise as possible is present.
- Optimal compensation can not be attained if the characteristics of the front and rear speakers differ dramatically.
- Auto equalizing operations will automatically cause the equalizer front/rear buttons to come ON. When using a 2-amp/4-speaker system, failure to press the front/rear buttons to turn them ON when using the auto equalizer compensation curve will not produce the desired results.
- Pressing the auto equalizer button again during operation will suspend operation.
- Auto equalizing can be performed without the accessory microphone using the built-in sensor mike. The accessory microphone should be used when optimal results are desired. (Never plug anything besides the accessory microphone into the mike jack. The accessory microphone is a special electret type, and cannot be used for any application other than that noted here.)

Auto Equalizing Operation Errors

The following will prevent proper operation of auto equalizing and will cause an error to be generated. Errors are signaled by a continuous high pitch signal.

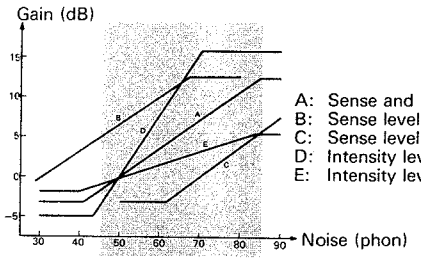
- No pink noise generated when the auto equalizing button is pressed. (i.e. Setting the dual amp balancer to the F side when using a 2-speaker system.)
- Inappropriate positioning of the sensor mike. (Set at a position as close to the normal position of the ear as possible.)
- Too much noise in the vehicle.

• ASL

The ASL (automatic sound levelizer) detects changes in noise within the vehicle caused by driving and road conditions and automatically adjusts volume accordingly. If noise becomes greater, volume is automatically increased. Frequency characteristics (low range and high range compensation volume) are also altered affected by the volume, so playback can also be enjoyed under optimal conditions.

Sense/Intensity Control

The sense and intensity levels should be adjusted as outlined here to allow the most effective operation of the ASL. The sense level is the point at which the ASL is activated to overcome the effects of noise. If the sense level is high, the ASL is activated even if little noise is present. If the sense level is low, the ASL is activated only after a great deal of noise is present, so satisfactory results are not obtained. The intensity level is the rate of volume change in relation to the noise after the ASL is activated. If the intensity level is on the (+) side, the change in volume is greater in relation to the noise, and on the (−) side it is less. The following diagram shows the relationship between sense and intensity levels.



A: Sense and intensity levels both at middle
B: Sense level greater than in A
C: Sense level less than in A
D: Intensity level greater than in A
E: Intensity level less than in A

Fig. 17

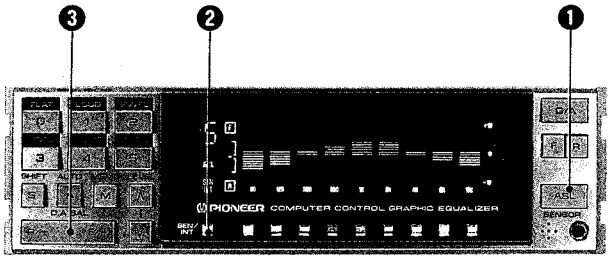


Fig. 18

Sense Level Adjustment

Sense level adjustment is performed with the deck volume at its minimum and the engine of the vehicle idling. (Do not use the accessory microphone.) Adjust so that one level of the sense level indicator is lit. (The sense level of this unit is set at minimum.)

1. Press the ASL button ❶ (ASL display appears).
2. Press the sense/intensity button ❷ twice to display the intensity level. (Confirm that the intensity level indicator is at the middle point.)
3. Press the sense/intensity button ❷ to display the sense level (SEN display will flash for 5 seconds).
4. During the period that the sense level display is flashing, adjust using the sense/intensity control button ❸ so that a single sense level indicator is lit.

- ASL will not operate when sense level is at minimum.

Intensity Level Adjustment

Intensity level adjustment is made while the vehicle is running. Adjust so that the proportion of the volume change maintains volume at the desired level. For safety's sake, actual adjustments should be made by a passenger and not the driver of the vehicle.

1. Press the ASL button ❶ (ASL display appears).
2. Press the sense/intensity button ❷ twice to display the intensity level (INT display will flash for 5 seconds).
3. During the period that the intensity level display is flashing, adjust using the sense/intensity control button ❸ so that the intensity level indicator is at the desired level.

Sense level display **Intensity level display**

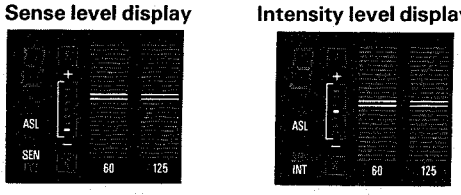


Fig. 19

- If the sense/intensity control button is not used for adjustment within 5 seconds after the sense/intensity button is pressed, the respective sense/intensity indicator will go out and the unit will return to the ASL display.

2. CONNECTION

- Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.
- Refer to the main amp instruction manual for details on correct connection of speakers and power supply.
- Don't run the leads for the input cord of this unit and the main amp speaker leads close together. If you do, the deck or tuner will generate unwanted noise.
- If distance between the graphic equalizer and main amp is too far to make proper connections, please buy the optional exclusive extension cord for the Component Car Stereo.
- When using two main amps, use the accessory power supply connector and connect the cord to the over 10A accessory connector. (Be sure that both amps are connected respectively to the ground.)

2-speaker system

- Don't use the front speaker's cord for a 2-speaker system.

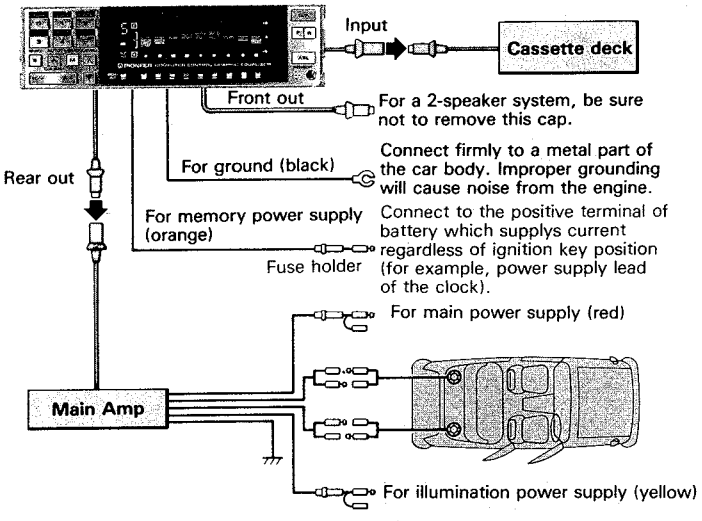


Fig. 20

4-speaker system

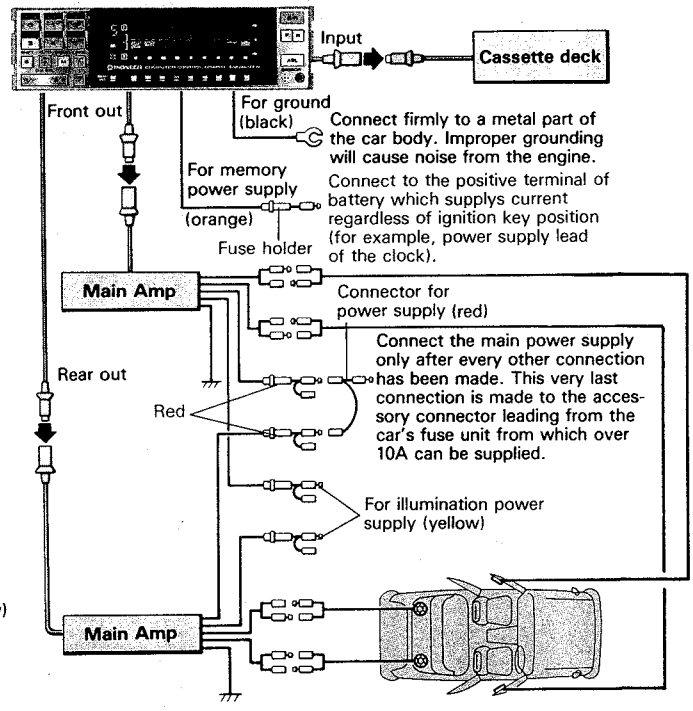


Fig. 21

3. PARTS LOCATION

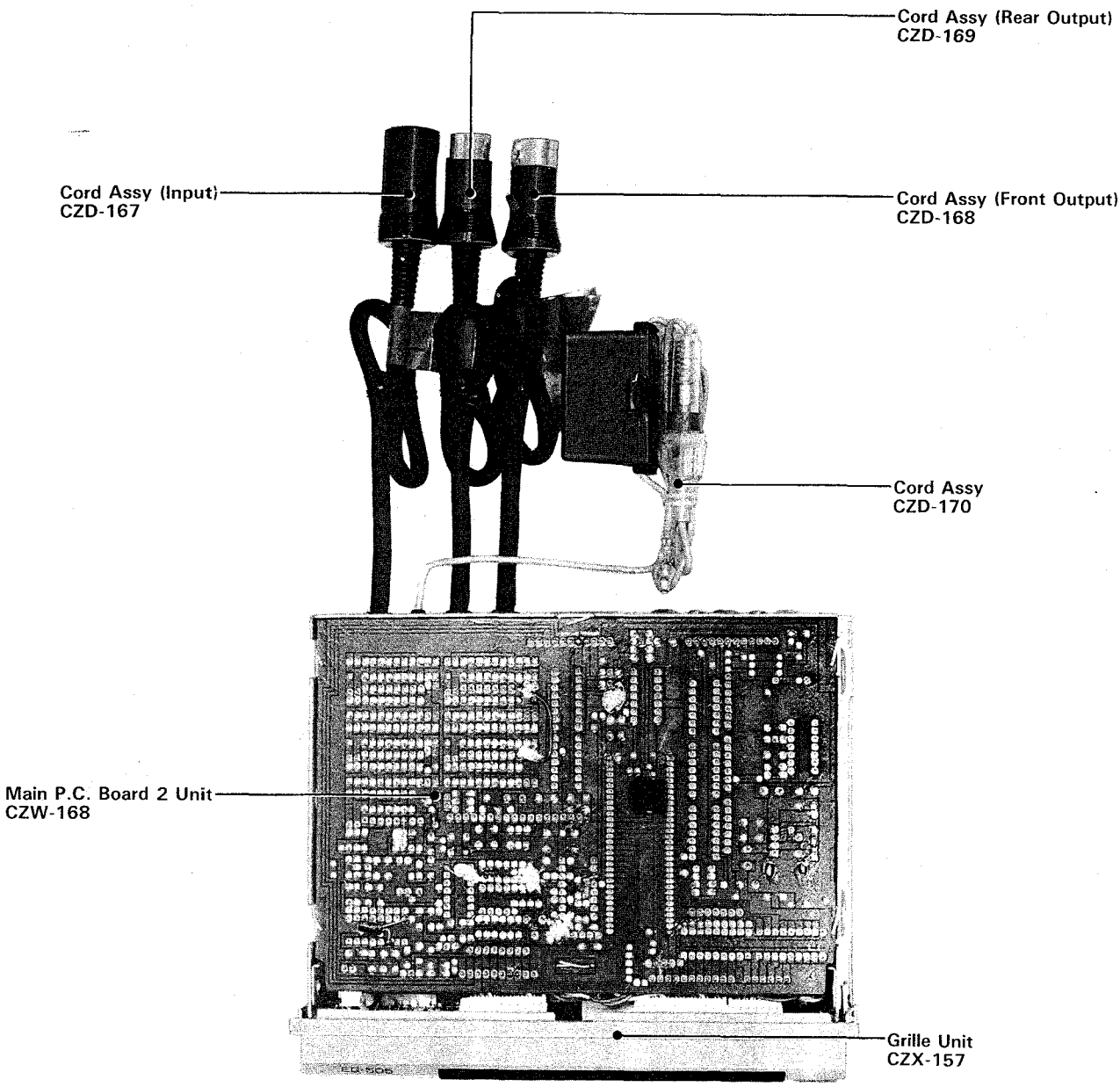


Fig. 22

4. DISASSEMBLY

• Removing the upper and lower cover

1. Remove the four screws labeled A and remove the upper and lower covers.

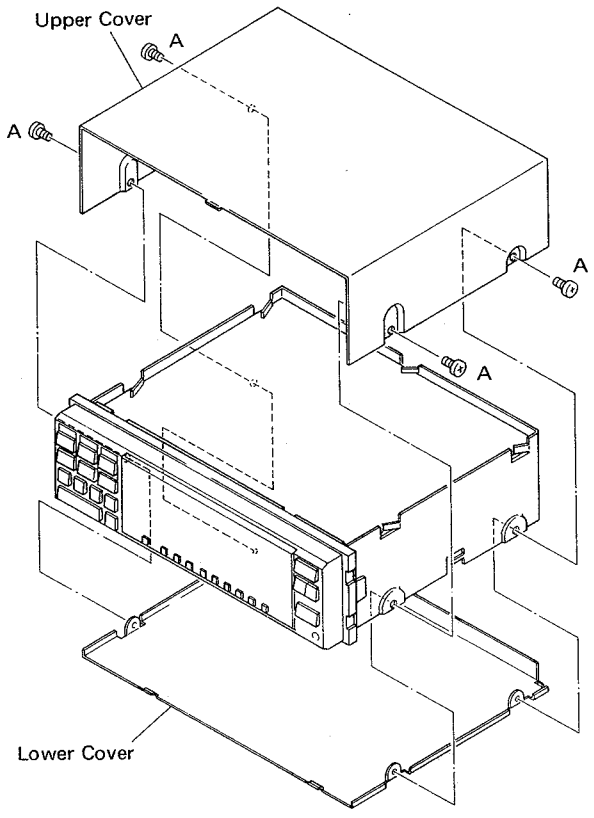


Fig. 23

• Removing the front cabinet assembly

1. Remove the two screws labeled B.
2. Pull out the front cabinet assembly and disconnect the seven connectors.

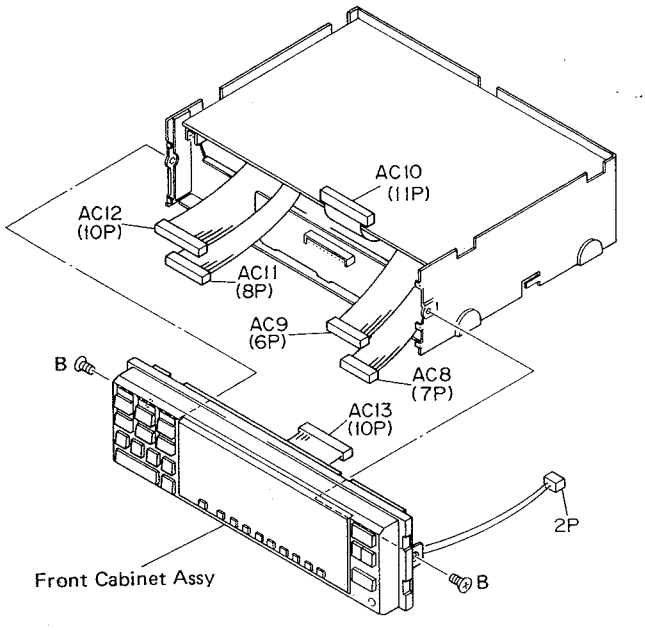


Fig. 24

• Removing the FL P.C. board unit

1. The unit is held in place by the four tabs indicated by the arrows. Bend these tabs out and pull out the FL P.C. board unit.
2. Bend the tabs back in when reinstalling the FL P.C. board unit. Note that installation will be difficult if the LED's are bend.

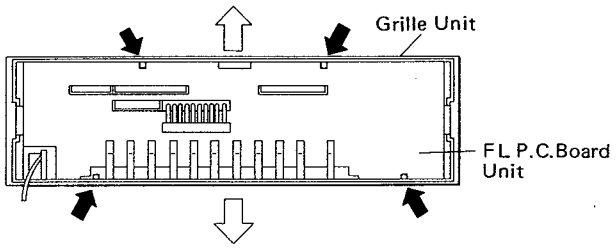


Fig. 25

• Removing main P.C. board 2 unit and switch P.C. board unit

1. Bend out the six tabs in the directions indicated by the black arrows.
2. Lift the main P.C. board 2 unit in the direction indicated by the white arrow.
3. Disconnect the three connectors.
4. Remove the two screws labeled C and remove the switch P.C. board unit.

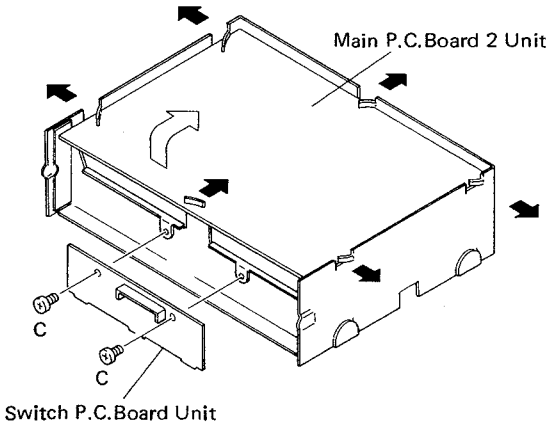


Fig. 26

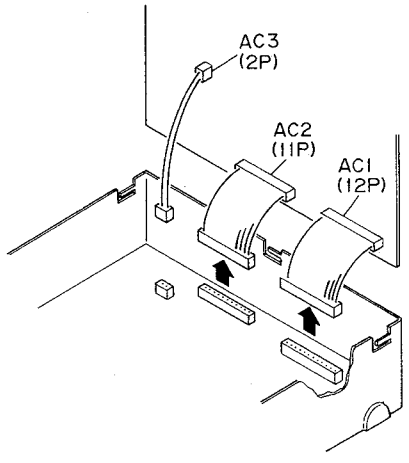


Fig. 27

5. ADJUSTMENTS

5.1 SPECTRUM ANALYZER LED LEVEL ADJUSTMENT

- **Connection Diagram**
- **Switches:** [F] [R] OFF; spectrum analyzer mode; ASL OFF; AUTO EQ OFF

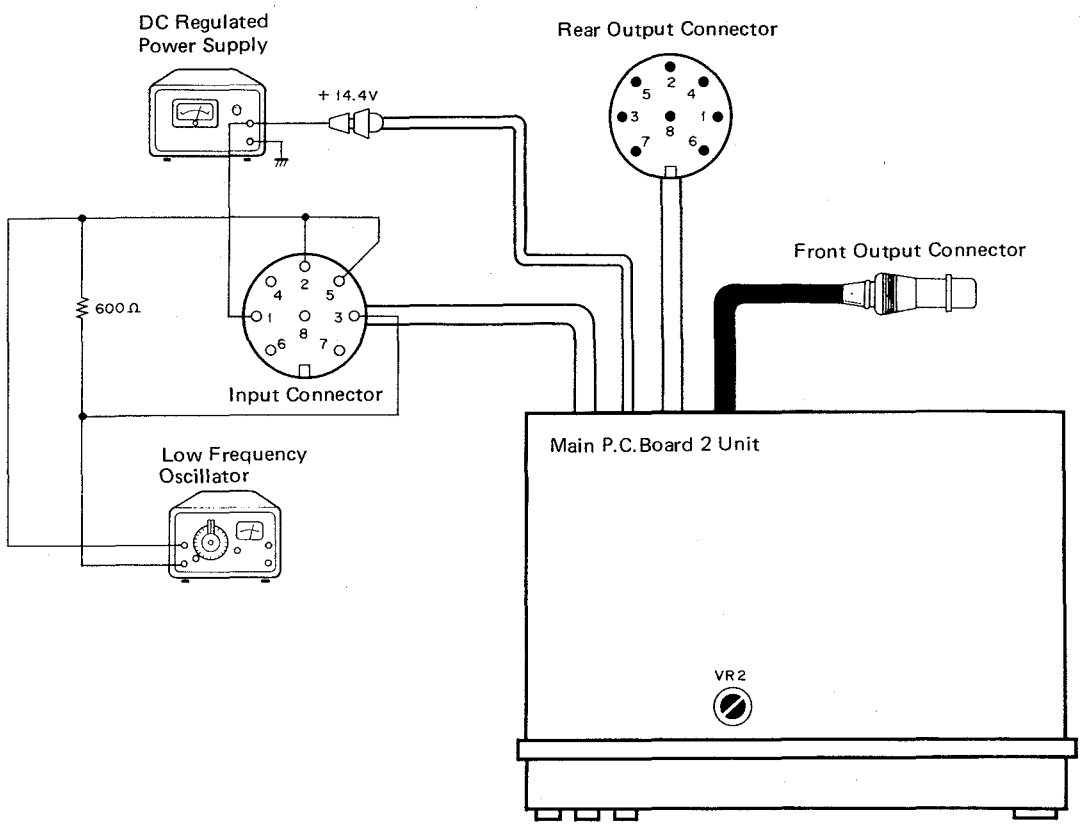


Fig. 28

- **To Adjust**

1. Apply a 1 kHz, 5 mV (−46 dBV) sine wave signal through the input connector.
2. Adjust VR2 so that the 1 kHz maximum level indicator FL LED is lit.

5.2 PINK NOISE ADJUSTMENT

- **Connection Diagram**

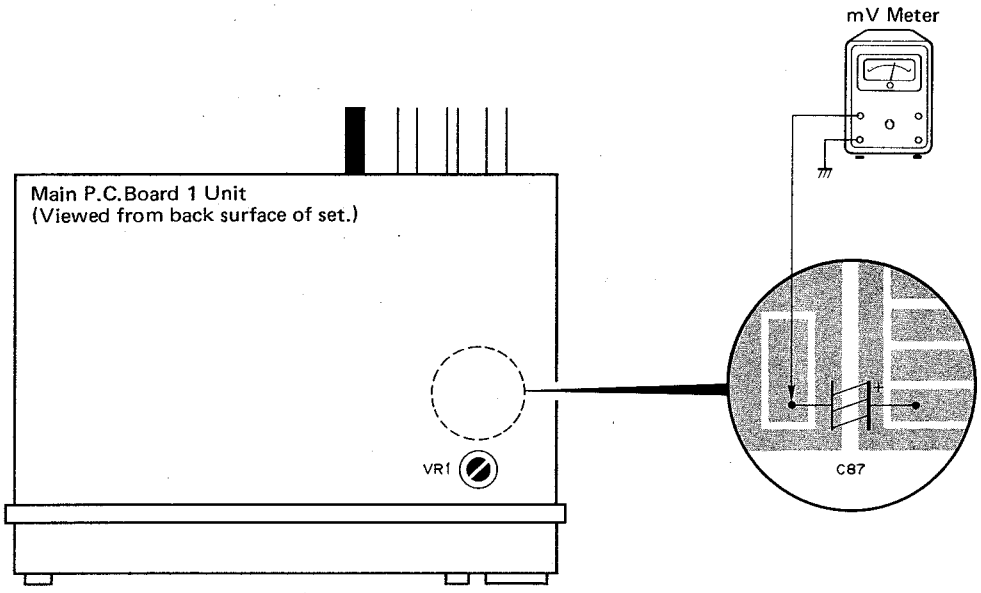


Fig. 29

- **To Adjust**

1. Connect to power supply in the same condition as that for normal operations. (Switches can be in any position.)
2. Adjust VR1 so that the mV meter reads 7 mV.

6. CIRCUIT DESCRIPTION

- **Level Diagram**

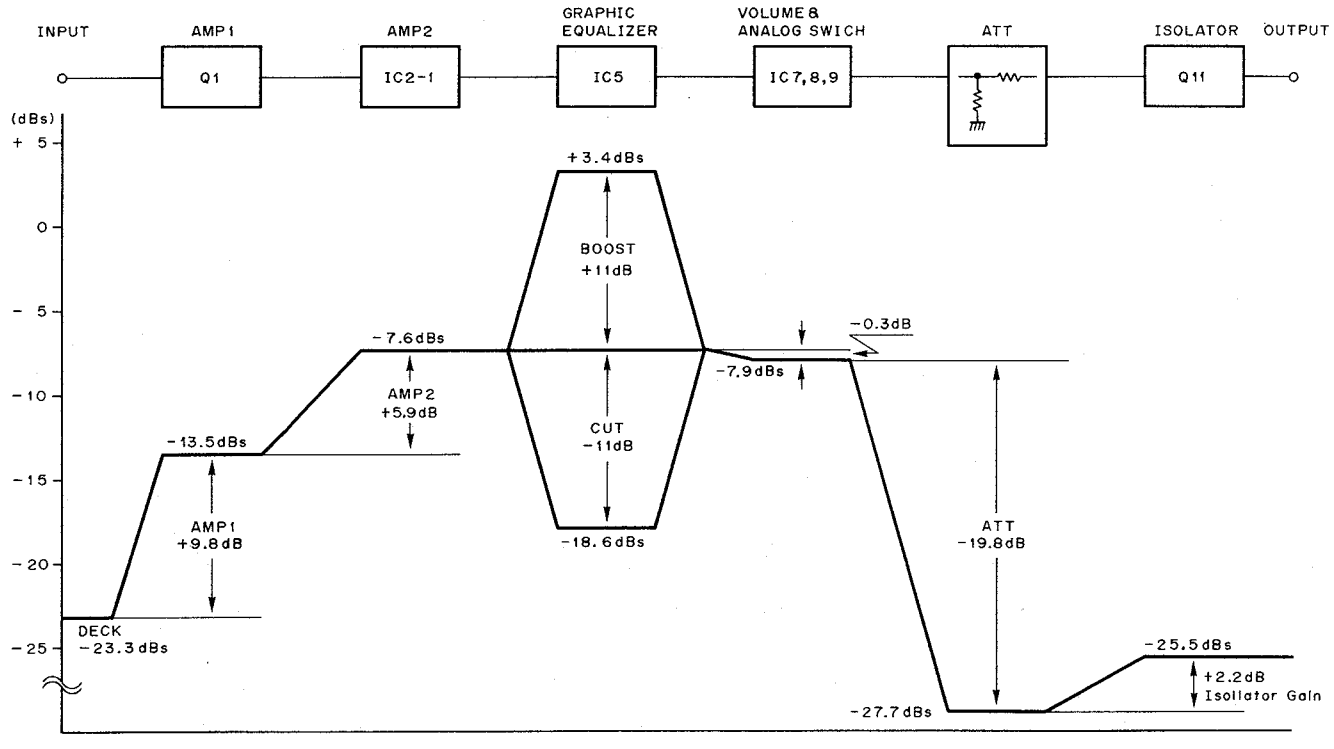


Fig. 30

• Block Diagram

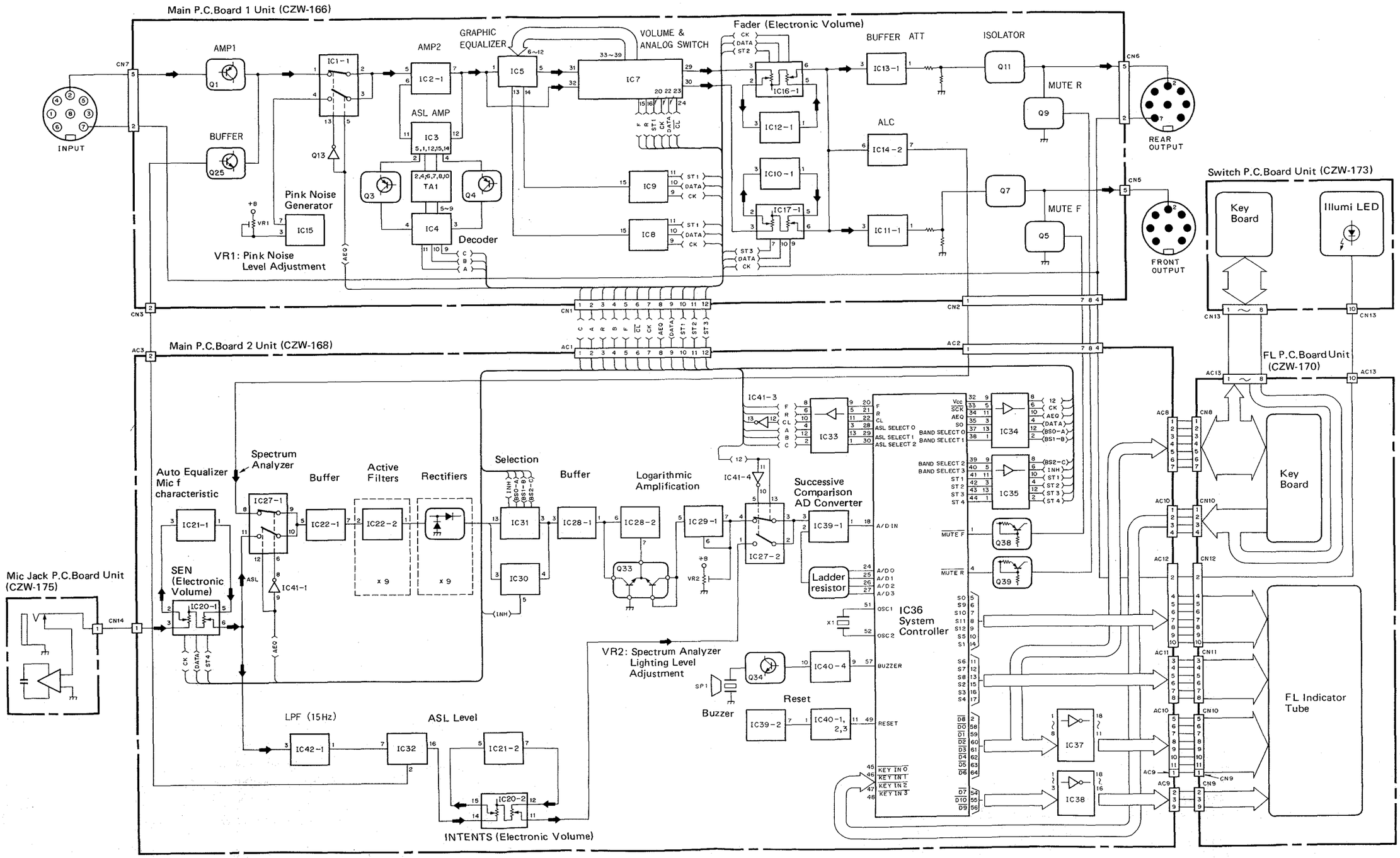


Fig. 31

• Auto Equalizer Operation

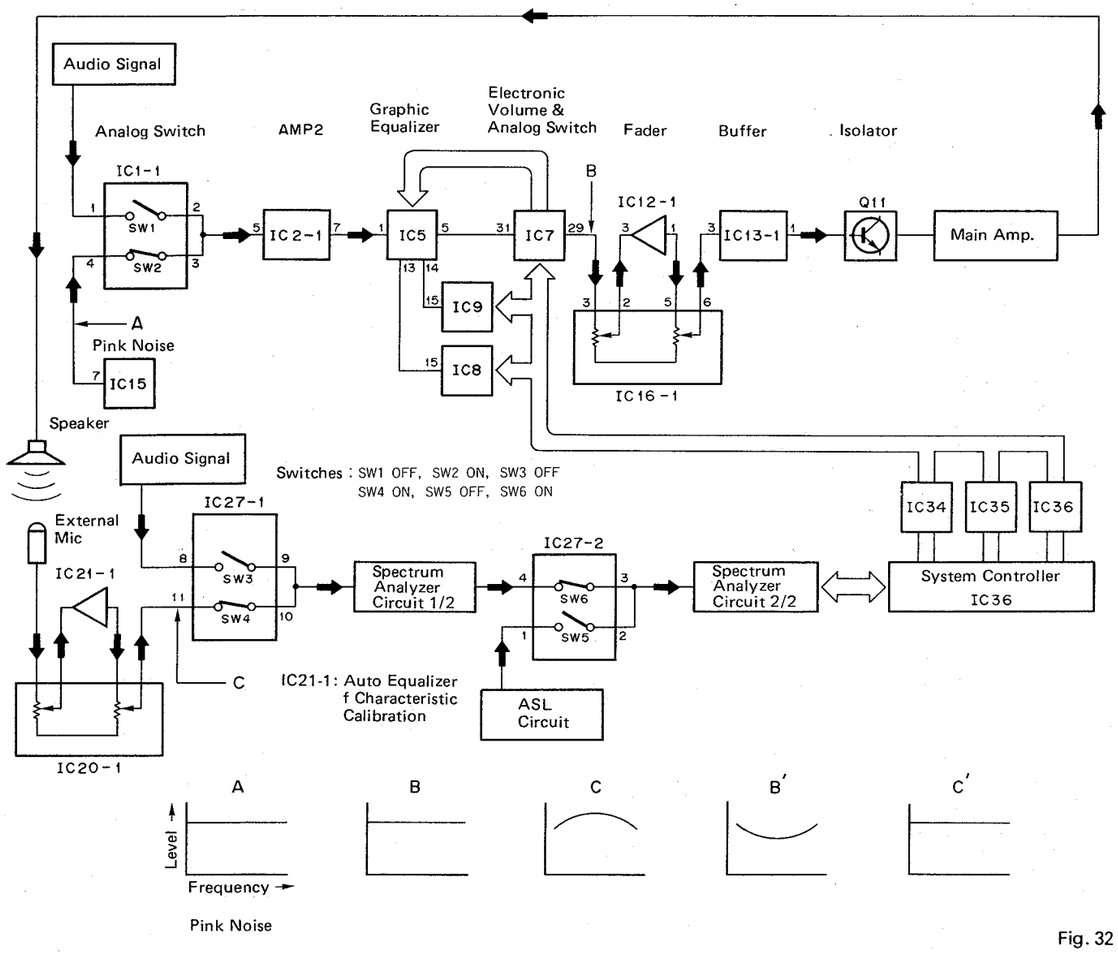


Fig. 32

Pink noise is output to the speakers from the built-in pink noise generation circuit and picked up by the microphone. The graphic equalizer is regulated to result in flat frequency characteristics.

Pink noise with the characteristics shown in Fig. 32-A is generated by a pink noise generation circuit (IC15). The pink noise passes via an analog switch (IC1-1) through the graphic equalizer (IC15), electronic volume, and analog switch (IC7) resulting in the pink noise shown in Fig. 32-B. It then passes through a fader, buffer, isolator, and main amp for output through the speakers.

The sound from the speaker is picked up by the microphone and the pink noise passes through the auto equalizer microphone frequency characteristic calibrator (IC21-1) and electronic volume «control» (IC20-1). The characteristics of this pink noise becomes those shown in Fig. 32-C in accordance with the audio circuit, speaker and the sound field characteristics of the vehicle's interior.

Next, the frequency characteristics entering the spectrum analyzer circuit via an analog switch (IC27-1) are measured and converted to digital signals. The signals are processed by the system controller (IC36), and data which represent characteristics opposite those of the measured frequency characteristics are sent to the graphic equalizer to become the characteristics shown in Fig. 32-B′, and output through the speakers. These are again picked up by the microphone and become the characteristics shown in Fig. 32-C′.

The procedure is performed in the order of Lch ⇒ Rch ⇒ Lch ⇒ Rch.

NOTE: PINK NOISE

Noise that is of uniform strength in the vicinity of the octave band or 1/3 octave band within a certain frequency range. Pink noise is white noise to which a 3 dB/oct attenuation filter has been applied. (White noise is noise that is of uniform strength in the vicinity of a band width of 1 kHz, irregardless of the frequency).

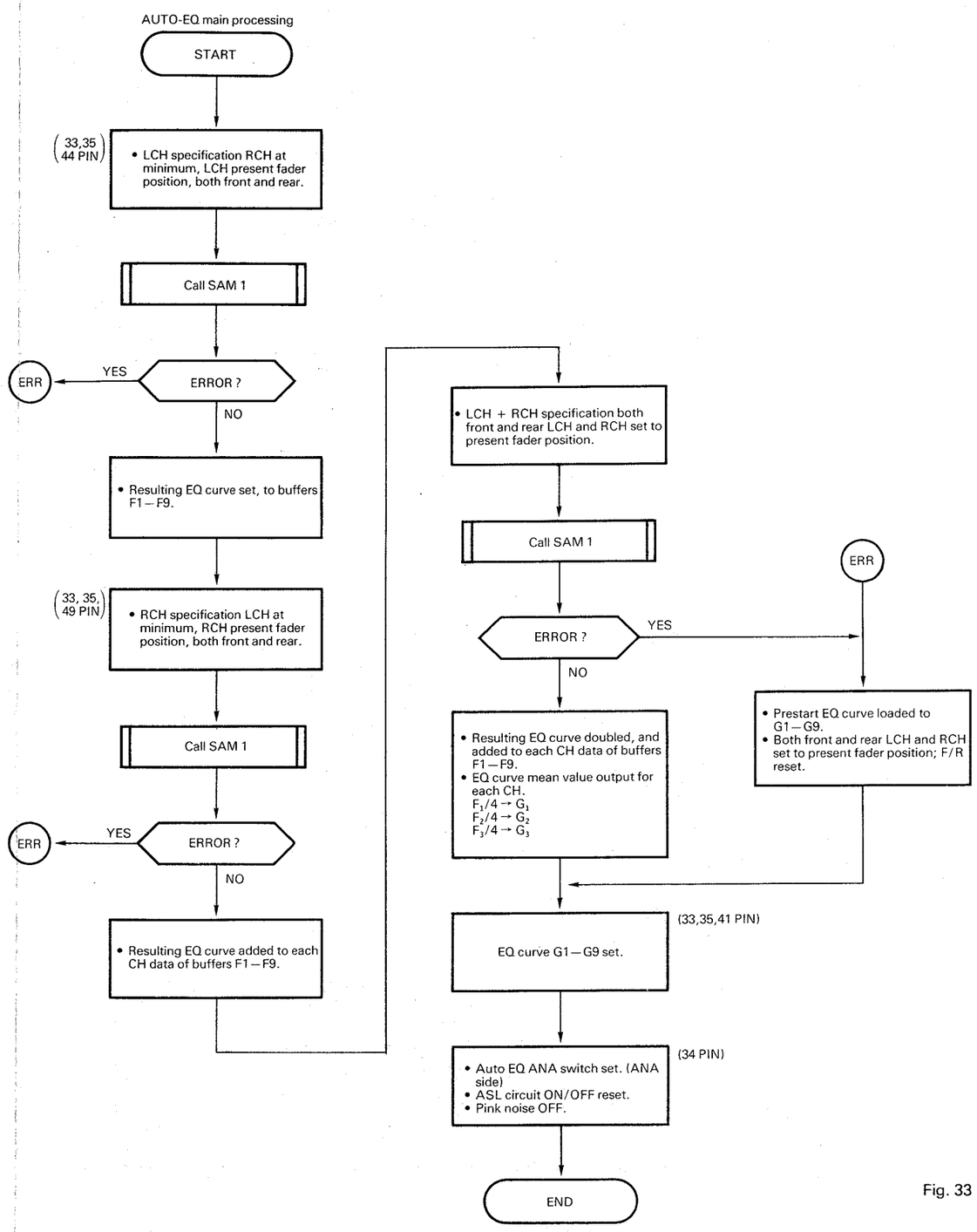


Fig. 33

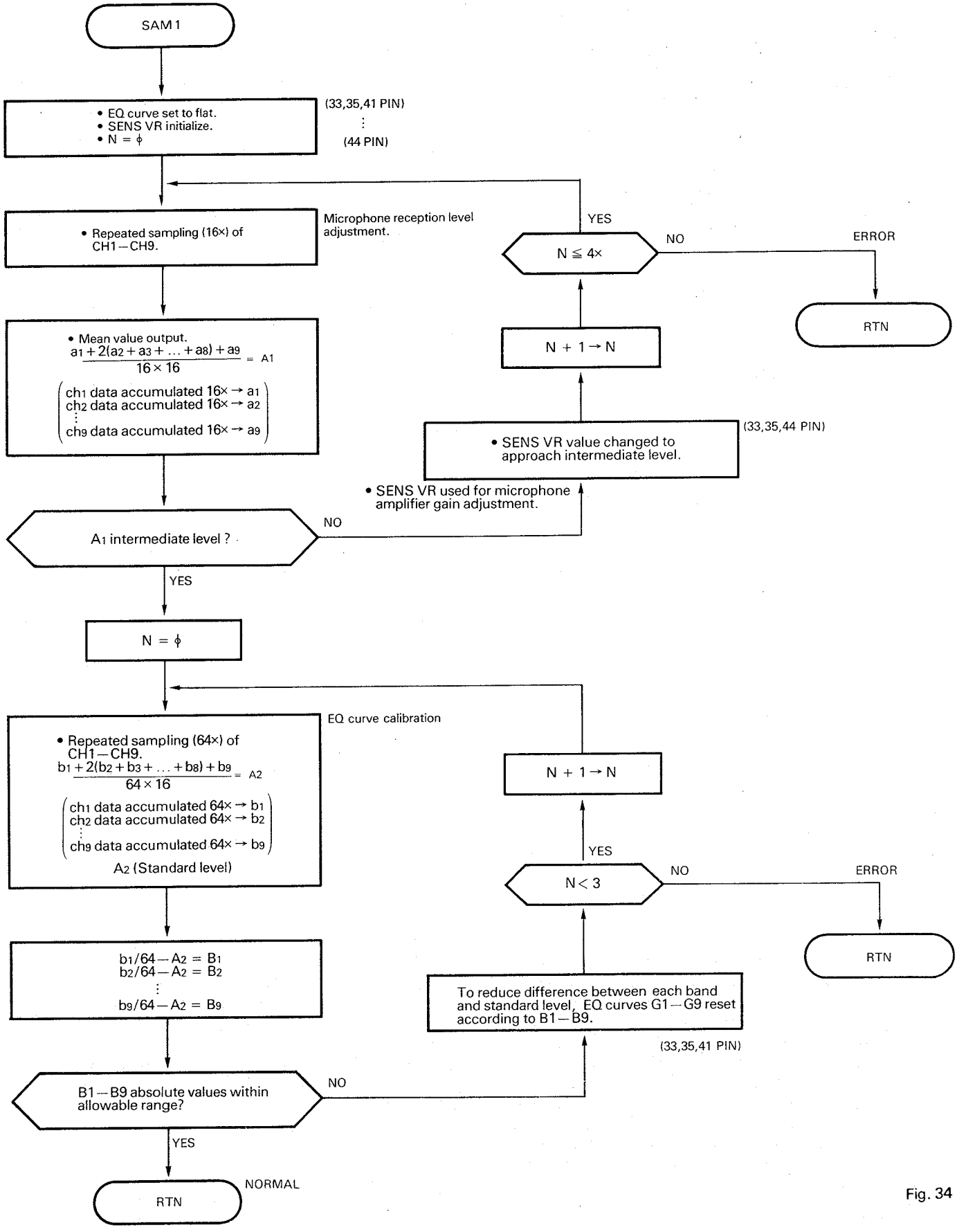
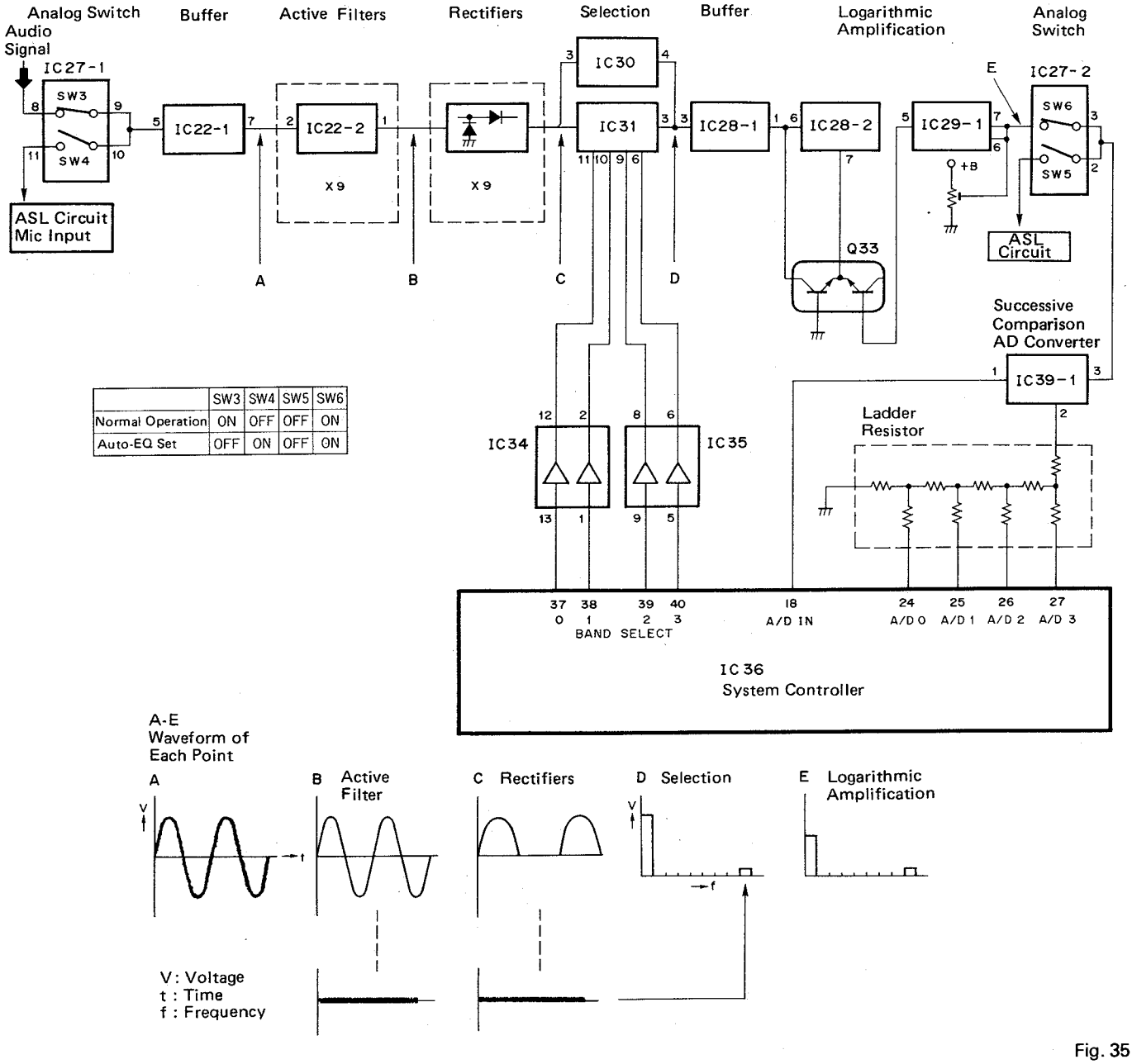

SAM 1
• EQ curve set to flat.
• SENS VR initialize.
• N = ϕ
(33,35,41 PIN)
(44 PIN)
• Repeated sampling (16×) of CH1 — CH9.
Microphone reception level adjustment.
YES
N ≦ 4×
NO
ERROR
RTN
• Mean value output.
a1 + 2(a2 + a3 + ... + a8) + a9 / 16 × 16 = A1
ch1 data accumulated 16× → a1
ch2 data accumulated 16× → a2
ch9 data accumulated 16× → a9
N + 1 → N
(33,35,44 PIN)
• SENS VR value changed to approach intermediate level.
• SENS VR used for microphone amplifier gain adjustment.
A1 intermediate level ?
NO
YES
N = ϕ
EQ curve calibration
• Repeated sampling (64×) of CH1 — CH9.
b1 + 2(b2 + b3 + ... + b8) + b9 / 64 × 16 = A2
ch1 data accumulated 64× → b1
ch2 data accumulated 64× → b2
ch9 data accumulated 64× → b9
A2 (Standard level)
N + 1 → N
YES
N < 3
NO
ERROR
RTN
b1/64 — A2 = B1
b2/64 — A2 = B2
b9/64 — A2 = B9
To reduce difference between each band and standard level, EQ curves G1 — G9 reset according to B1 — B9.
(33,35,41 PIN)
B1 — B9 absolute values within allowable range?
NO
YES
NORMAL
RTN

Fig. 34

• Spectrum Analyzer Operation



	SW3	SW4	SW5	SW6
Normal Operation	ON	OFF	OFF	ON
Auto-EQ Set	OFF	ON	OFF	ON

Fig. 35

The audio signal form the graphic equalizer passes through an analog switch (IC27-1) and buffer (IC22-1) and is divided into 9 bands (60 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, 16 kHz) by active filters (IC22-2, IC23-1, IC23-2, IC24-1, IC24-2, IC25-1, IC25-2, IC26-1, IC26-2). These are then rectified by D23—D40 and DC components are removed. Next, after they are sequentially selected by IC30 and IC31 using time division, they are passed through a buffer (IC28-1) and then subjected to logarithmic compression by a logarithmic amplifier (IC28-2, IC29-1). This is to allow logarithmic display on the spectrum equalizer.

Next, after an analog switch (IC27-2) is passed, a 4-bit digital signal that makes voltage applied to terminal 2 of a successive comparision A-D converter equal the voltage of terminal 3 is A-D converted by the generation of terminals 24—27 of the system controller (IC36).

The digitalized signal is sent to the display circuit after processing by IC36.

• Key Matrix

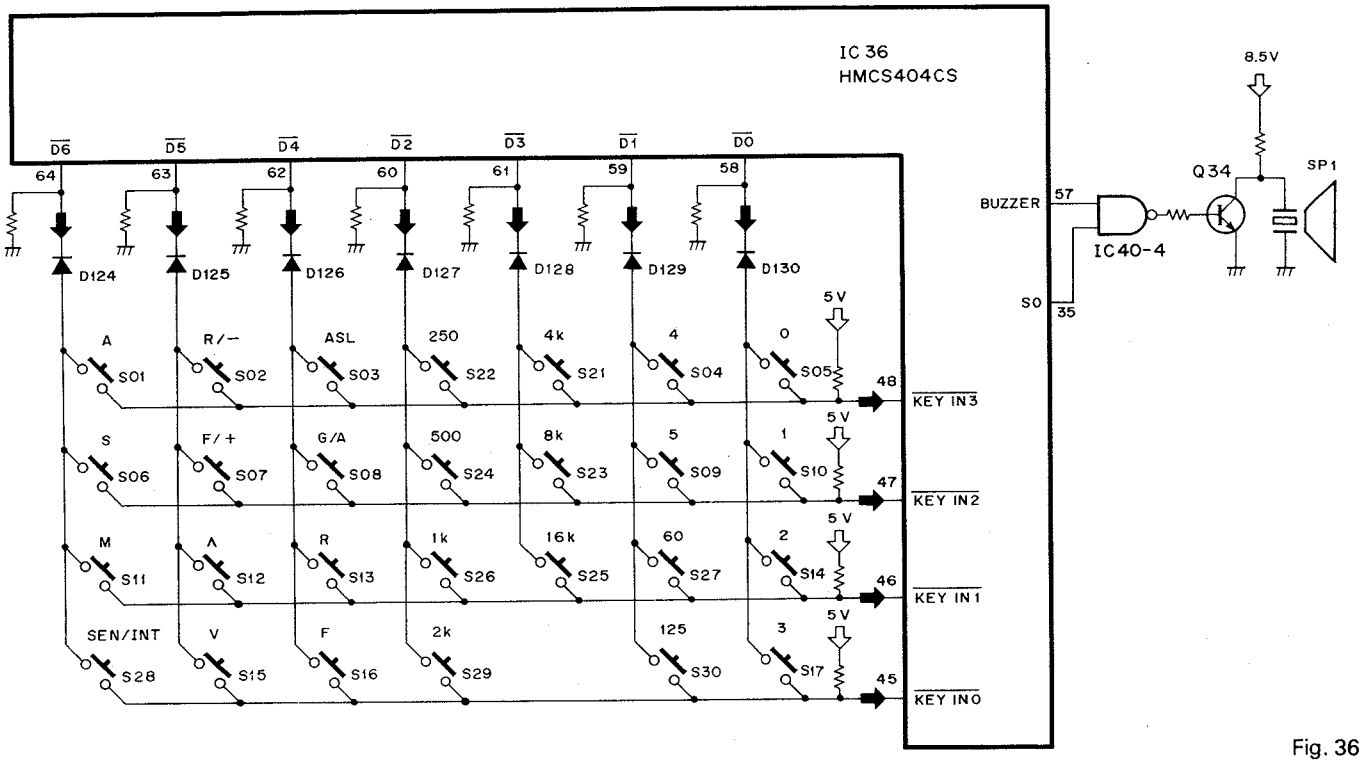


Fig. 36

A 7 × 4 matrix is formed by 7-strobe output and 4 key inputs. When operation keys are pressed, the KEY IN terminal becomes L to receive key input. When key input is received, the IC36 BUZZER terminal outputs H, and Q34 is OFF. A beep is generated by a voltage buzzer.

• FL Tube Indicator Drive Circuit

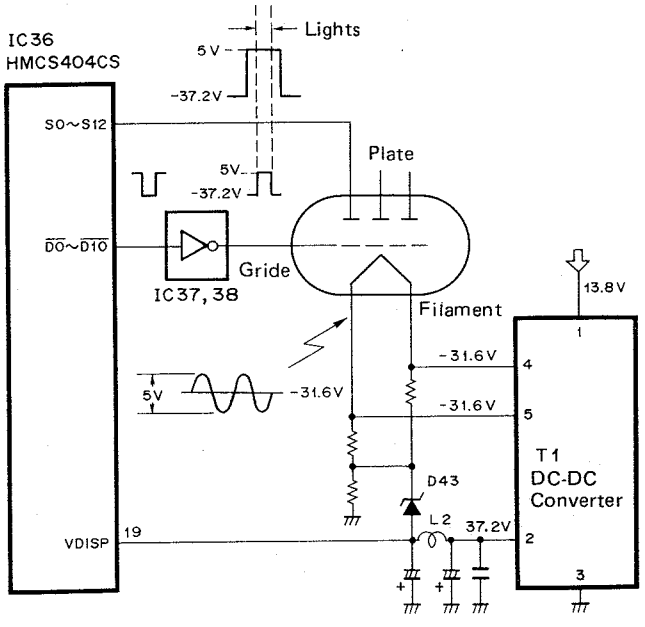


Fig. 37

The DC-DC converter converts the 13.8 V input voltage of terminal 1 to −37.2 V, and supplied it to terminal 19 (VDISP) of IC36. This voltage becomes display voltage V−.

The FL tube filament is driven by AC voltage, but this AC voltage is received by the DC-DC converter, and output to terminals 4 and 5. The −37.2 V voltage to terminals 4 and 5 is converted to −31.6 V by a Zener diode (D43) and is supplied to IC36.

In effect, filament DC voltage is converted to a standard −31.6 V AC voltage. When IC36 display output . . grid and plate output become H (5V), a difference is generated between the filament DC voltages and the filament light. Output from IC36 is in the form of 11 digits (grid) × 13 segments (plate), for dynamic lighting.

The FL tube common terminal (COM) is the FL tube indicator, and indicates the portion of the display that is normally lit regardless of operation. When SWD + B is entered (i.e. deck turned ON), terminal 3 of reset circuit IC40 goes from H to L and Q36 becomes ON. H (5V) is output to the common terminal and the display lights.

• ASL (Automatic Sound Levelizer) Circuit

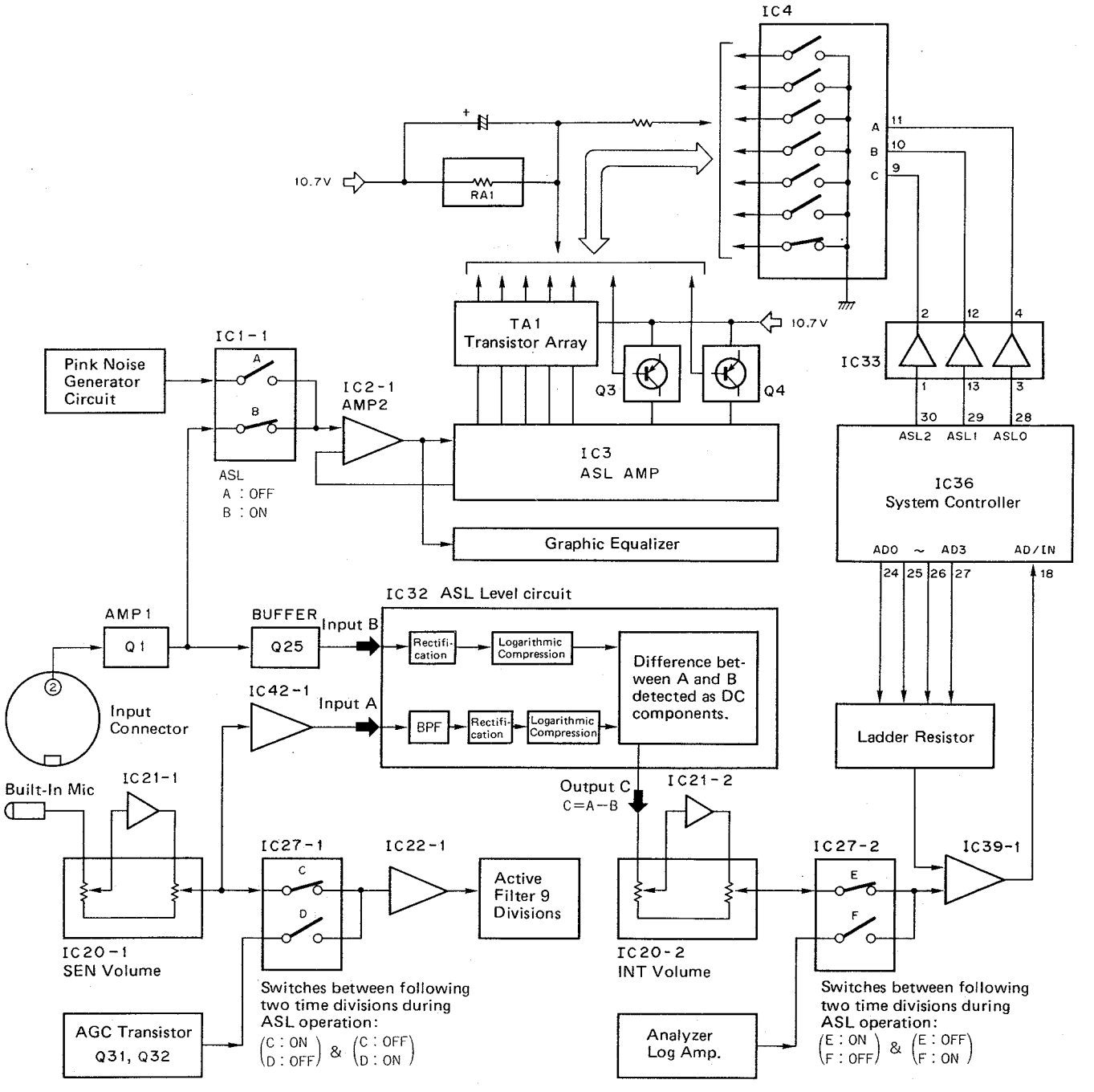


Fig. 38

This circuit automatically adjust volume to keep in at an optimal level in response to changes in noise within the vehicle caused by driving and road conditions.

The signal and vehicle interior noise is picked up by the input connector, and amp gain and f characteristics are changed. Volume is then automatically adjusted.

The signal from the connector is amplified by Q1, and it passes through buffer Q25 to enter level circuit IC32ASL (Fig. 38, input B).

Vehicle interior noise is picked up by the built-in microphone, and passes through electronic volume (sense control) IC20-1. It is then amplified by IC42-1 and enters IC32 (Fig. 38, input A).

In IC32, the difference between inputs A and B is detected as DC components, and output (Fig. 38, output C).

When output C = A–B and input A is fixed.

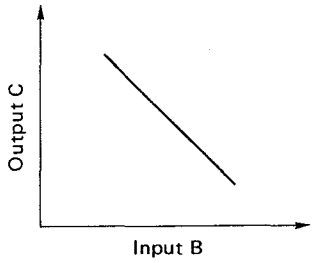


Fig. 39

When input B is fixed.

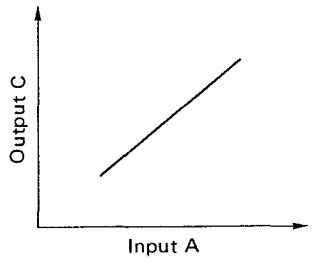


Fig. 40

Due to this relationship, when output C becomes greater, increase the amp gain. When output C becomes smaller, decrease the amp gain.

Output C passes electronic volume IC20-2 (intensity control), is A-D converted by IC39-1, and then enters the system controller IC36. IC36 selects the amp gain and f characteristic pattern, and outputs a control signal to IC4. IC4 switching changes the IC3 ASL amp gain and f characteristics. As shown in Fig. 41, there are seven amp gain and f characteristic patterns for the EQ-505, and one from among these is chosen.

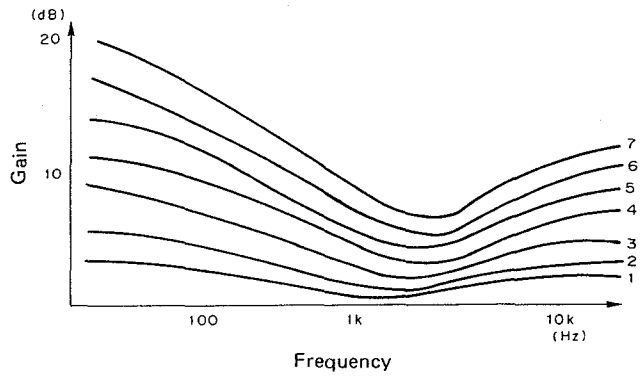


Fig. 41

• Reset Circuit

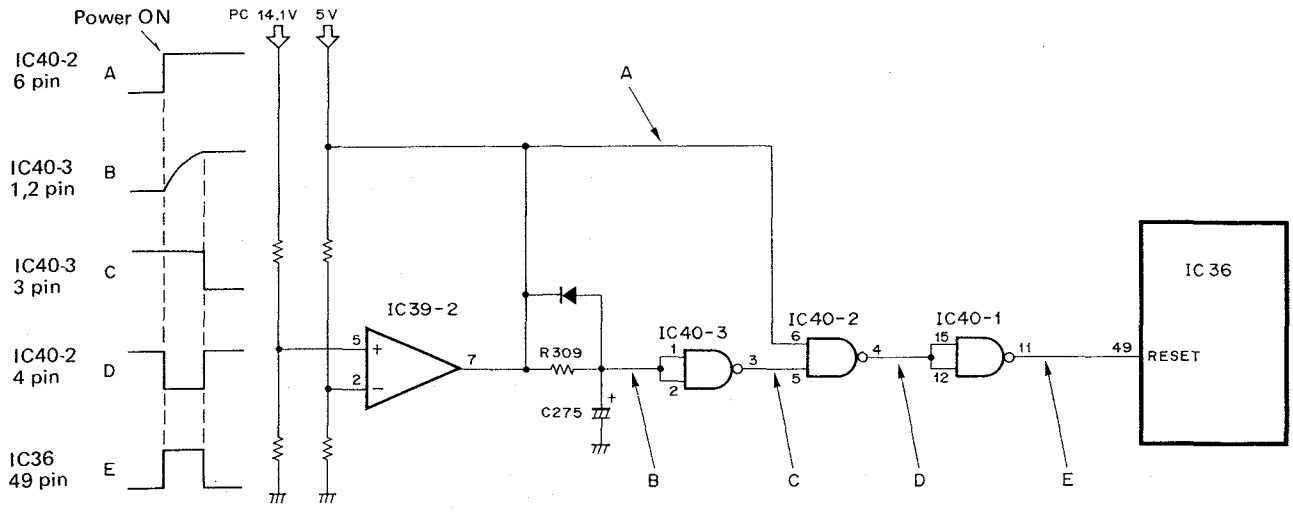


Fig. 42

A single pulse reset signal is generated when power is ON.

Voltage is applied to the PC 5V line when power is ON, while terminal 6 of IC40-2 and terminal 7 of IC39-2 becomes H. Next, terminals 1 and 2 of IC40-3 are delayed by time constants R309 and C275, and changed from L to H. Accompanying this, terminal 5 of IC40-2 changes from H to L. Terminal 6 of IC40-2 has already been changed to H, so terminal 4 of IC40-2 changes from H to L to H. Then, inversion is performed by IC40-1, and an L to H to L reset pulse is generated.

• Power Supply System Block Diagram

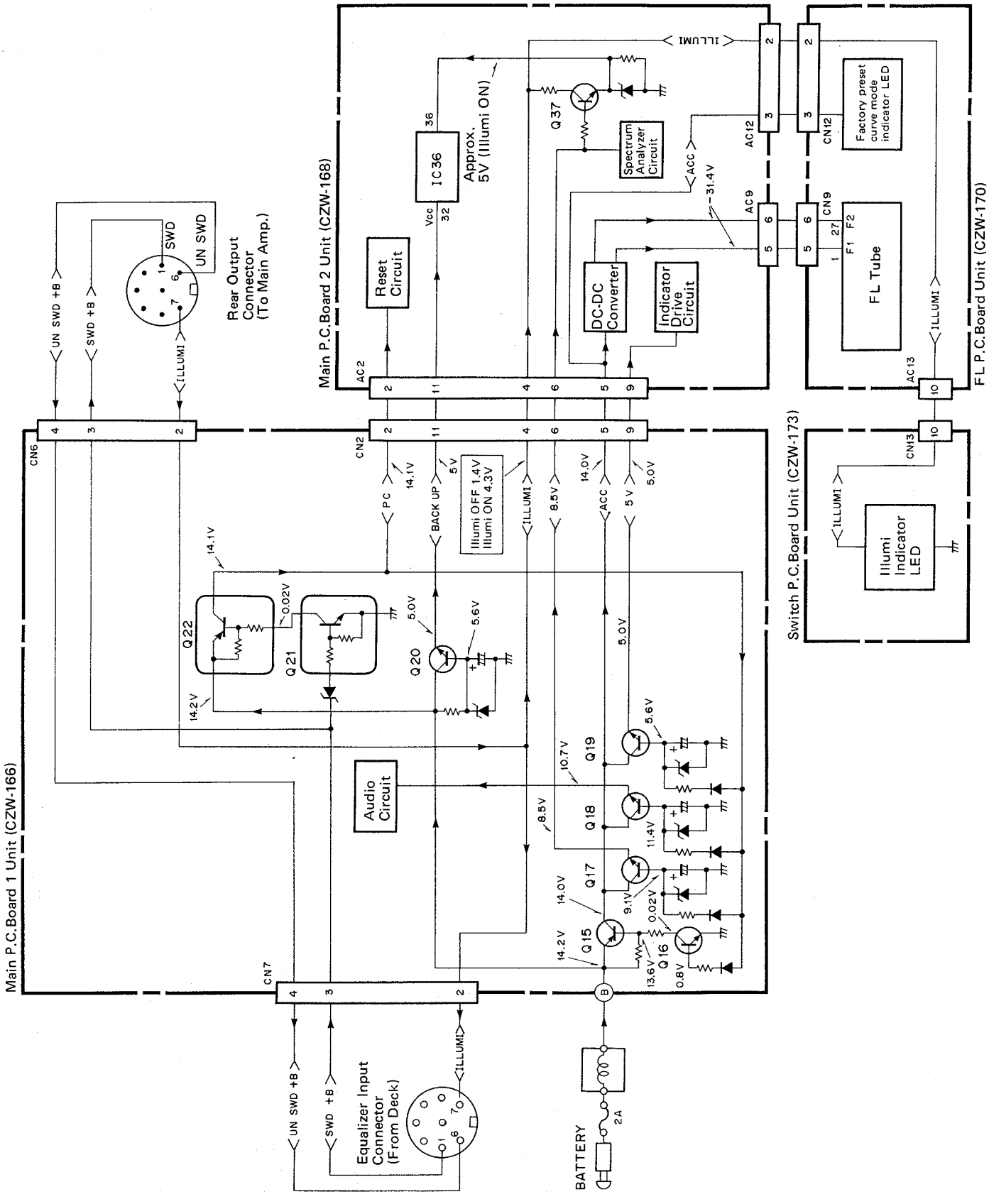


Fig. 43

When power is OFF, Q20 BACK UP power supply only is operational.

When power is switched ON, as SWD + B voltage is applied from equalizer input connector pin 1, Q21 and Q22 become ON, and PC voltage is generated. The PC voltage causes Q15—Q19 to become operational.

Voltage from ACC is applied to the DC-DC converter, and voltage (approx. 31.6 V) is supplied to the FL tube filament.

The illumination LED lights when voltage is applied to the illumination circuit power supply line. Also, Q37 becomes ON, and terminal 36 of IC36 changes from L to H. The FL tube is rather dark.

• Operation When Power is Switched ON

○ **Power ON (initial)**

• **Set conditions**

1. EQ mode, F and R all OFF; flat graphic equalizer characteristics.
2. Fader electronic volume set to center point.
3. ASL SENS adjustment position at minimum level.
4. ASL INTENSITY adjustment position at minimum level.
5. All equalizer characteristics of user memory preset keys set to flat.
6. Preset keys set to factory preset mode.

• **Front cabinet assembly indicators**

1. FL tube preset number OFF.
2. No FL tube graph display.
3. Fl type level indicator shows fader indicator; one dot lit in center position.
4. FL tube, ASL, INT, SEN indicators OFF.
5. FL tube band number and dB indicator lit.
6. Upper preset buttons illuminated in orange (factory preset mode).

• **F, R either ON**

1. Preset button factory preset memory indicates 0 EQ curve.
2. Preset No. 0 displayed.

○ **Power ON (not original)**

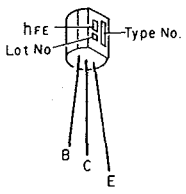
1. Status before power OFF restored.
   Preset number display
   F, R button ON or OFF
   EQ, curve status
   ASL ON or OFF
   EQ mode or spectrum analyzer mode
   Factory preset mode or user mode
   However, EQ adjustment mode and memory mode are canceled and unit reverts to normal operation mode.
2. Spectrum analyzer mode EQ display shown spectrum analyzer.
3. SEN and INT display flashing OFF.
4. Interruped AUTO-EQ operation.

• **When small lights are used**

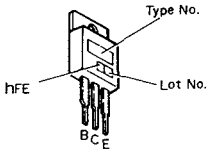
1. Buttons automatically light when small lights are on (Preset 0 - 5 , AUTO-EQ, MODE, FADER + −, G/A, ASL, LEVEL UP/DOWN, F/R).
2. FL tube at low luminance.

• ICs and Transistors

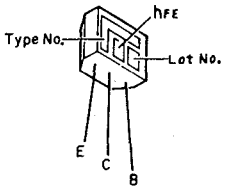
2SC1383



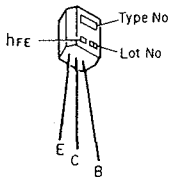
2SB511
2SD325



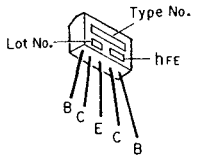
2SA933S
2SA933SLN



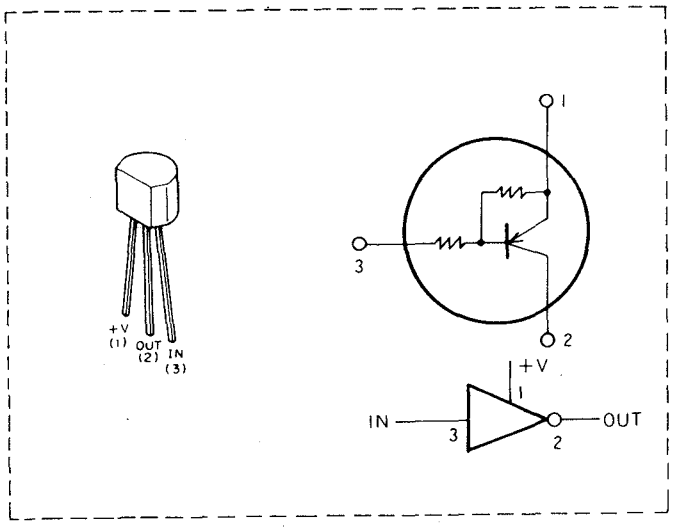
2SC1740S
2SD1468S



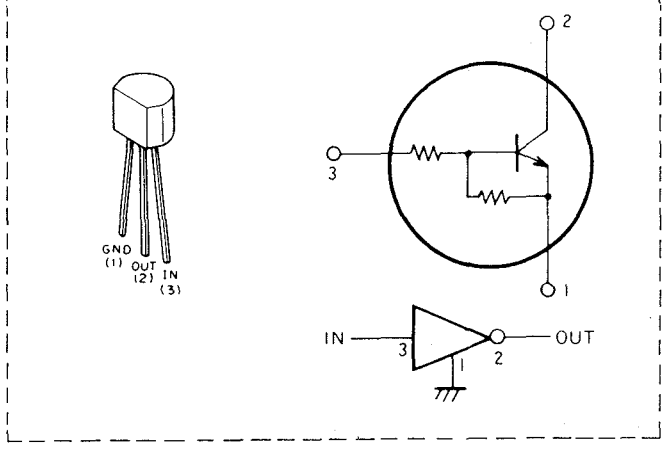
2SC1583



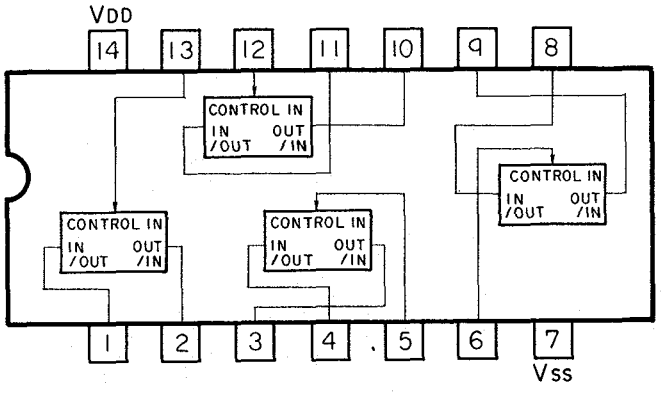
DTA114ES



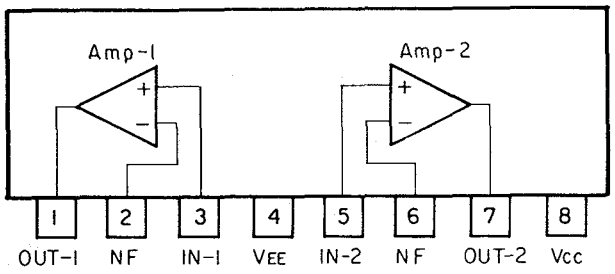
DTC144ES



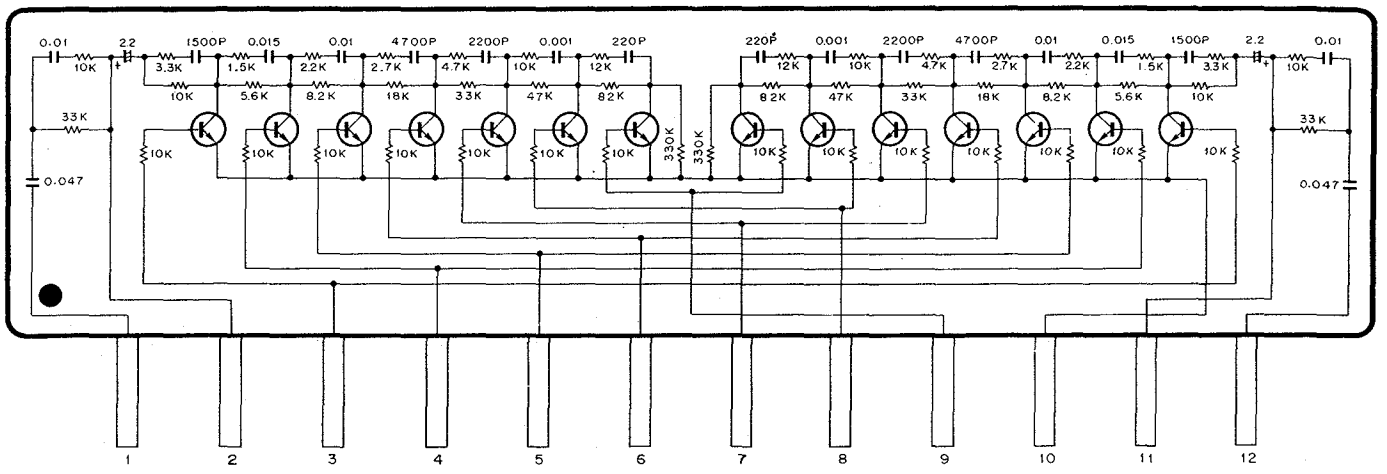
M4066BP



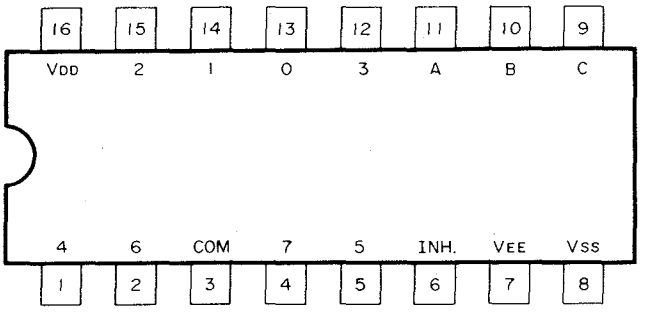
M5220L

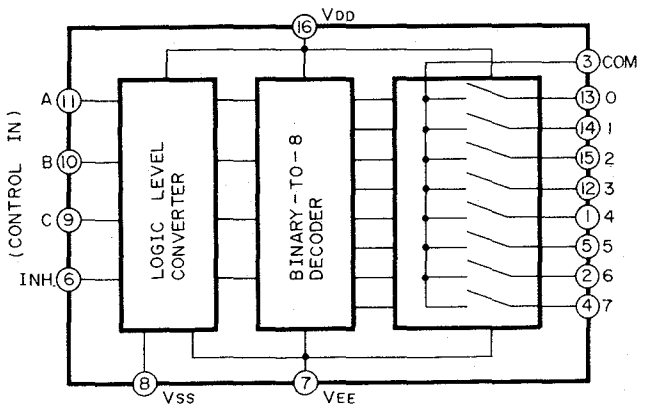


HC2005A



HD14051B



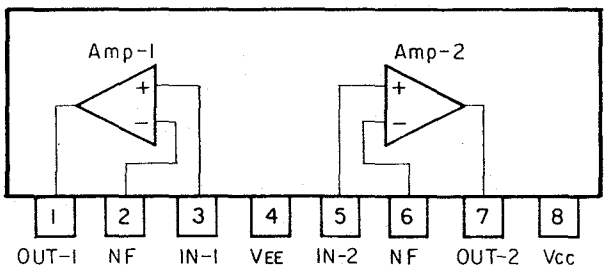


The HD14051B is an 8 channel multiplexer capable of both selecting between the analog signal and digital signal and combining them. The switch corresponding to each of the 8 channels is turned on by the digital signal in the control pin.

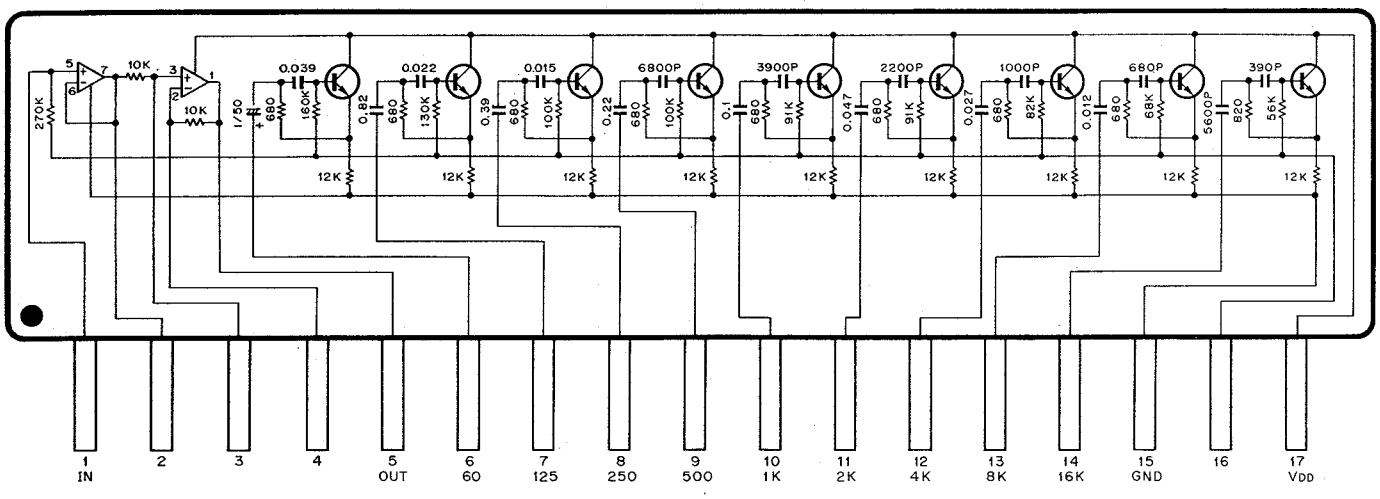
Control input signals				"ON" channel
INH	C	B	A	
L	L	L	L	0
L	L	L	H	1
L	L	H	L	2
L	L	H	H	3
L	H	L	L	4
L	H	L	H	5
L	H	H	L	6
L	H	H	H	7

When a HIGH level is input to INH, no channel turns on regardless of the state of the other inputs.

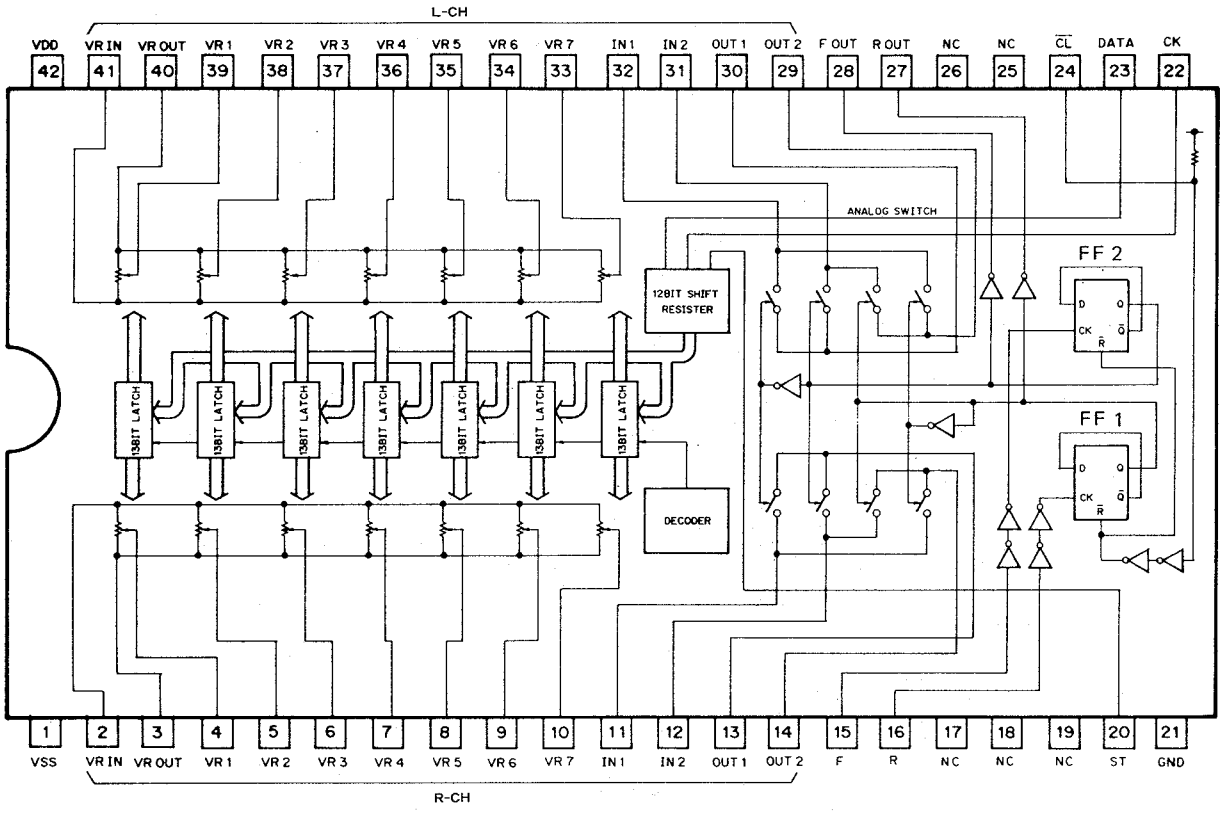
M5218L



HKG-09-01K



TC9187N

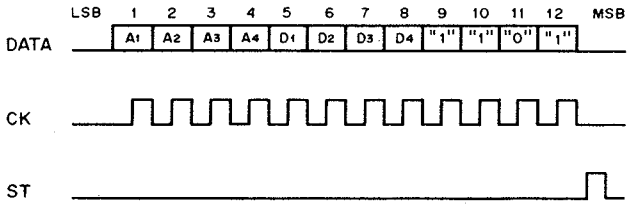


• Pin Functions: (TC9187N)

Pin	Pin Name	Function and Operation
2 41	(R) (L) V_{RIN}	Common input pin for each volume control
3 40	(R) (L) V_{ROUT}	Common output pin for each volume control
4 39	(R) (L) VR_1	Common pin for volume control 1 60 Hz
5 38	(R) (L) VR_2	Common pin for volume control 2 125 Hz
6 37	(R) (L) VR_3	Common pin for volume control 3 250 Hz
7 36	(R) (L) VR_4	Common pin for volume control 4 500 Hz
8 35	(R) (L) VR_5	Common pin for volume control 5 1 kHz
9 34	(R) (L) VR_6	Common pin for volume control 6 2 kHz
10 33	(R) (L) VR_7	Common pin for volume control 7 4 kHz
11 32	(R) IN_1 (L)	Input pin for the analog switch matrix (Input pin for signals that by-pass the EQ circuit.)
12 31	(R) IN_2 (L)	Input pin for the analog switch matrix (Input pin for signals that pass through the EQ circuit.)
13 30	(R) (L) OUT_1	Front right output pin Front left output pin
14 29	(R) (L) OUT_2	Rear right output pin Rear left output pin
15	F	Input pin for analog switch control (Turns the front equalizer circuit on and off)
16	R	Input pin for analog switch control (Turns the rear equalizer circuit on anf off)
17 ~ 19 25 ~ 28		Not in use
20	ST	Strobe input pin. Control data at the CK pin and DATA pin is latched when this pin goes HIGH.
22	CK	Clock input pin. Fetches control data
23	DATA	Control data input pin. Control data is made up of 12 bits.
24	$\overline{CL}$	Clear input pin for the analog switch matrix. Turns the equalizer circuit off at a LOW level input.
1 21 42	V_{DD} GND V_{SS}	Power supply pin

*Pins 15 and 16 are active HIGH. The states of FF1 and FF2 are reversed at the leading edge of these pins and turns the circuit on and off.

• Control Data Format



a) A1-A4 (bits 1-4)

Data bits 1-4 select one of the seven volume control circuits denoted VR1-VR7.

A_1	A_2	A_3	A_4	Volume
H	L	L	H	VR_1
L	H	L	H	VR_2
H	H	L	H	VR_3
L	L	H	H	VR_4
H	L	H	H	VR_5
L	H	H	H	VR_6
H	H	H	H	VR_7

b) D1-D4 (bits 5-8)

Data bits 5-8 set each volume step. Data bits 5-8 control the volume selected by A1-A4 in 13 steps.

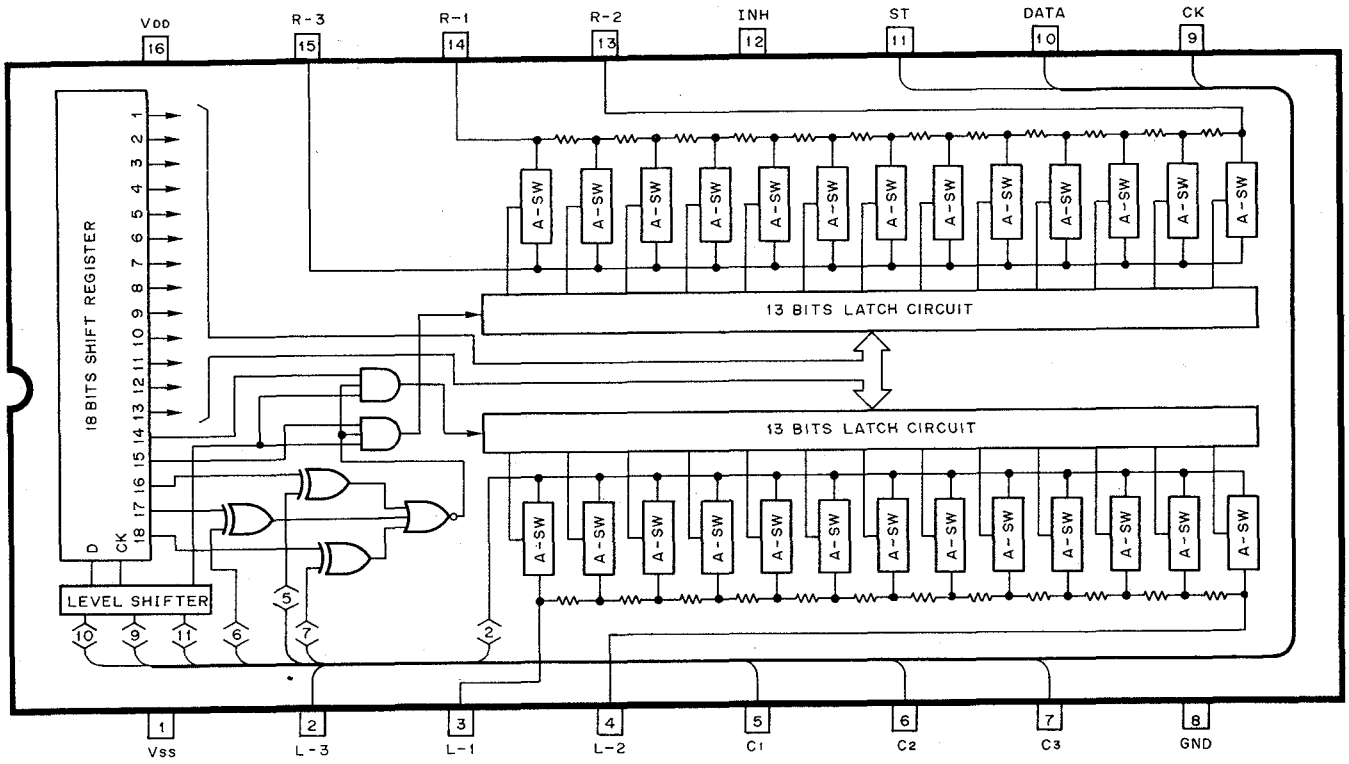
D_1	D_2	D_3	D_4	Step
L	H	H	L	+6 (+12 dB)
H	L	H	L	+5 (+10 dB)
L	L	H	L	+4 (+8 dB)
H	H	L	L	+3 (+6 dB)
L	H	L	L	+2 (+4 dB)
H	L	L	L	+1 (+2 dB)
L	L	L	L	0 (0 dB)
H	H	H	H	−1 (−2 dB)
L	H	H	H	−2 (−4 dB)
H	L	H	H	−3 (−6 dB)
L	L	H	H	−4 (−8 dB)
H	H	L	H	−5 (−10 dB)
L	H	L	H	−6 (−12 dB)

c) Codes Bits (bits 9-12)

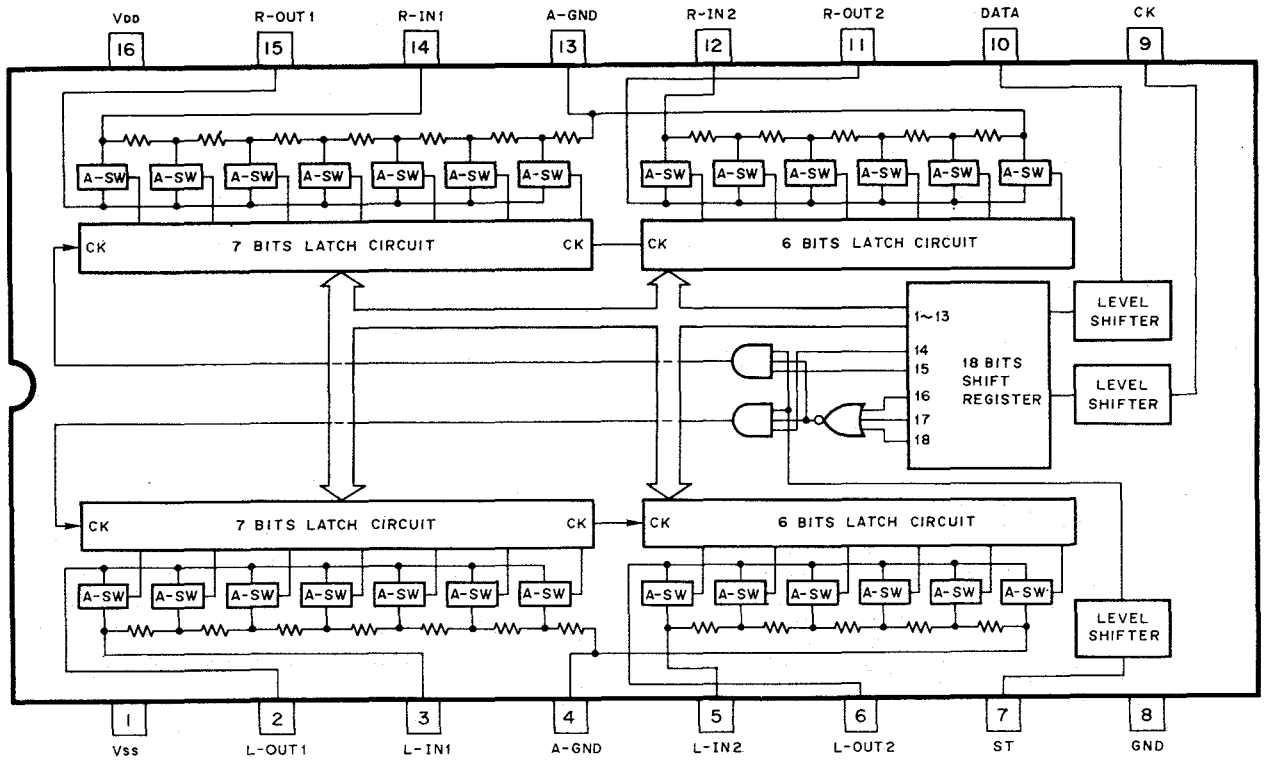
Data bits 9-12 must match the code for TC9187N. Data is received only when these bits are as shown below.

9	10	11	12
H	H	L	H

TC9170P



TC9154P/TC9154AP



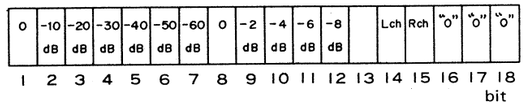
• Pin Function (TC9154P)

Pin No.	Pin Name	I/O	Function and Operation
1	Vss	—	(−) power source pin
2	L-OUT1	Output	10 dB step attenuation output
15	R-OUT1	Output	Signal received at IN, reduced from 0 dB to −60 dB in 7 10-dB steps
3	L-IN1	Input	10 dB step attenuation input
14	R-IN1	Input	
4	A-GND	—	AC ground
13	A-GND	—	
5	L-IN2	Input	2 dB step attenuation input
12	R-IN2	Input	
6	L-OUT2	Output	2 dB step attenuation output
11	R-OUT2	Output	Signal received at IN reduced from 0 dB to −8 dB in 5 steps of 2 dB
7	ST	Input	Strobe input pin—attenuation & channel selection signals received from the DATA and CK terminals are latched by going "H" level at this pin—if "H" level not reached at this pin, prior data is used.
8	GND	—	
9	CK	Input	Input pin for clock used when receiving data from the DATA pin
10	DATA	Input	Attenuation and channel selection data input pin—inputted as 18 bit CK signal.
16	VDD	—	(+) power source pin

• Electronic Volume Control

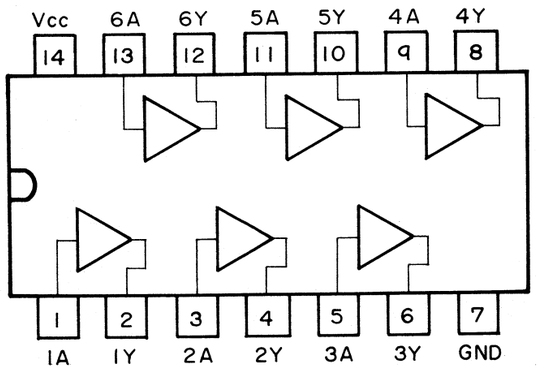
- Electronic volume control (IC16, 17) is carried out by serial transmission of data from the system controller IC36, allowing volume to be adjusted in 2 dB increments. The control signals from DATA CK and ST are as follows:

1. The data line transmits data concerning degree of damping and channel selection. This data is made up of 18 bits.

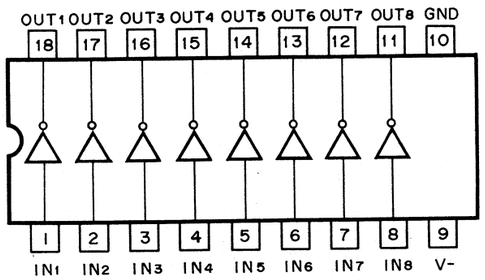


2. The CK line is for the clock signal.
3. A strobe signal latches volume data by causing the ST line to go "H".

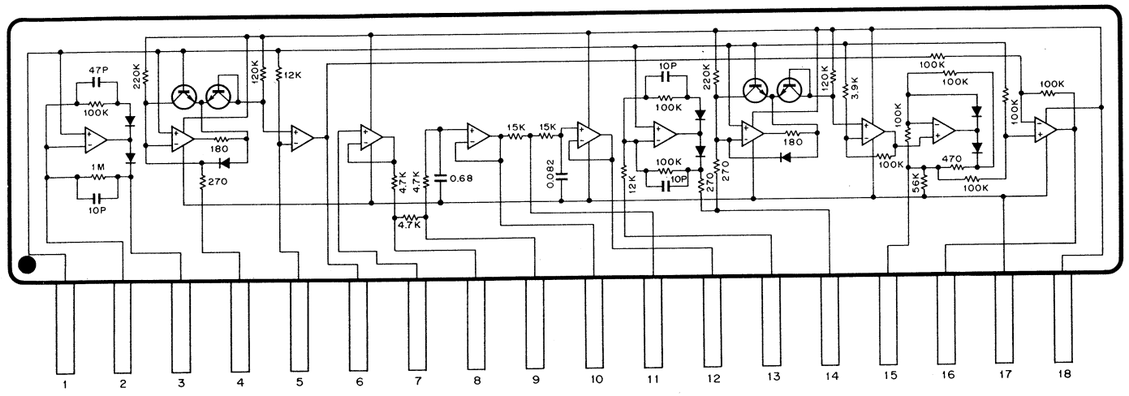
HD7407P



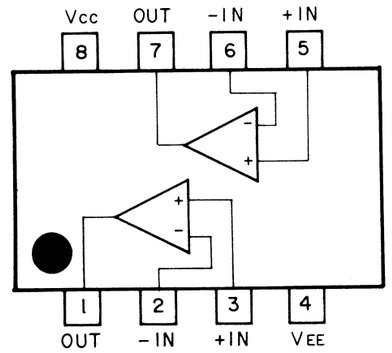
MSL915RS



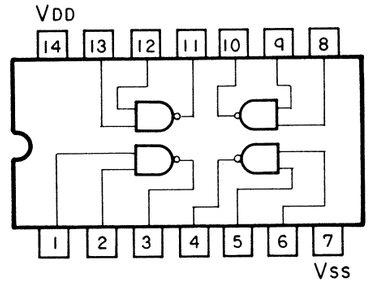
HC2006A



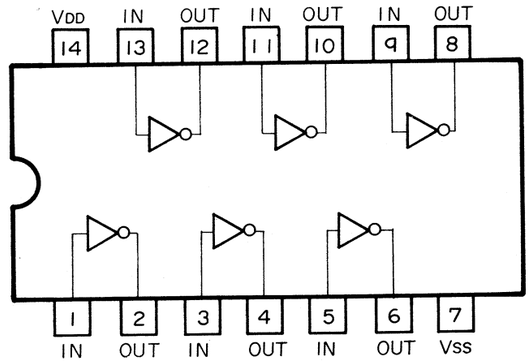
NJM2903D

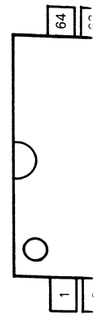


M4011BP



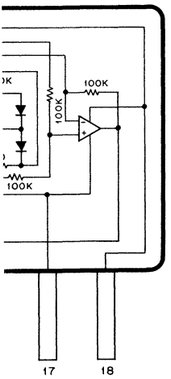
MN4069B



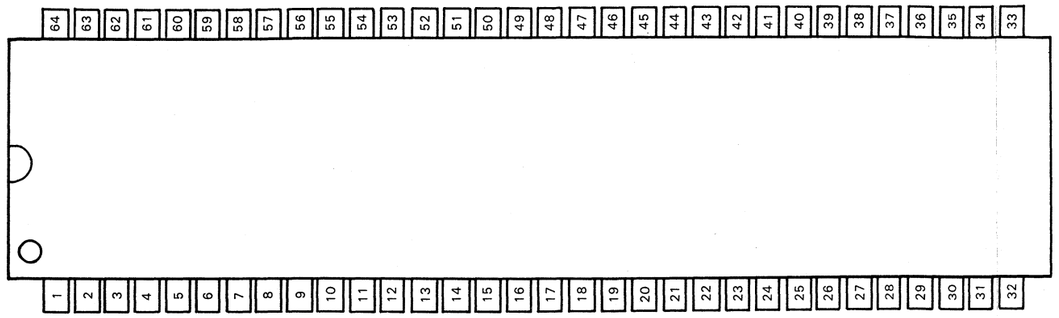


• Pin Fun

Pin	Pin n
1	MUTE
2	D8
3	ORG
4	MUTE
5	S0
6	S9
≀	≀
9	S2
10	S5
≀	≀
13	S8
14	S1
≀	≀
17	S4
18	A/D IN
19	VDISP
20	F
21	R
22	CL
23	POWE DOWN
24	A/D 0
≀	≀
27	A/D 3



HMCS404CS

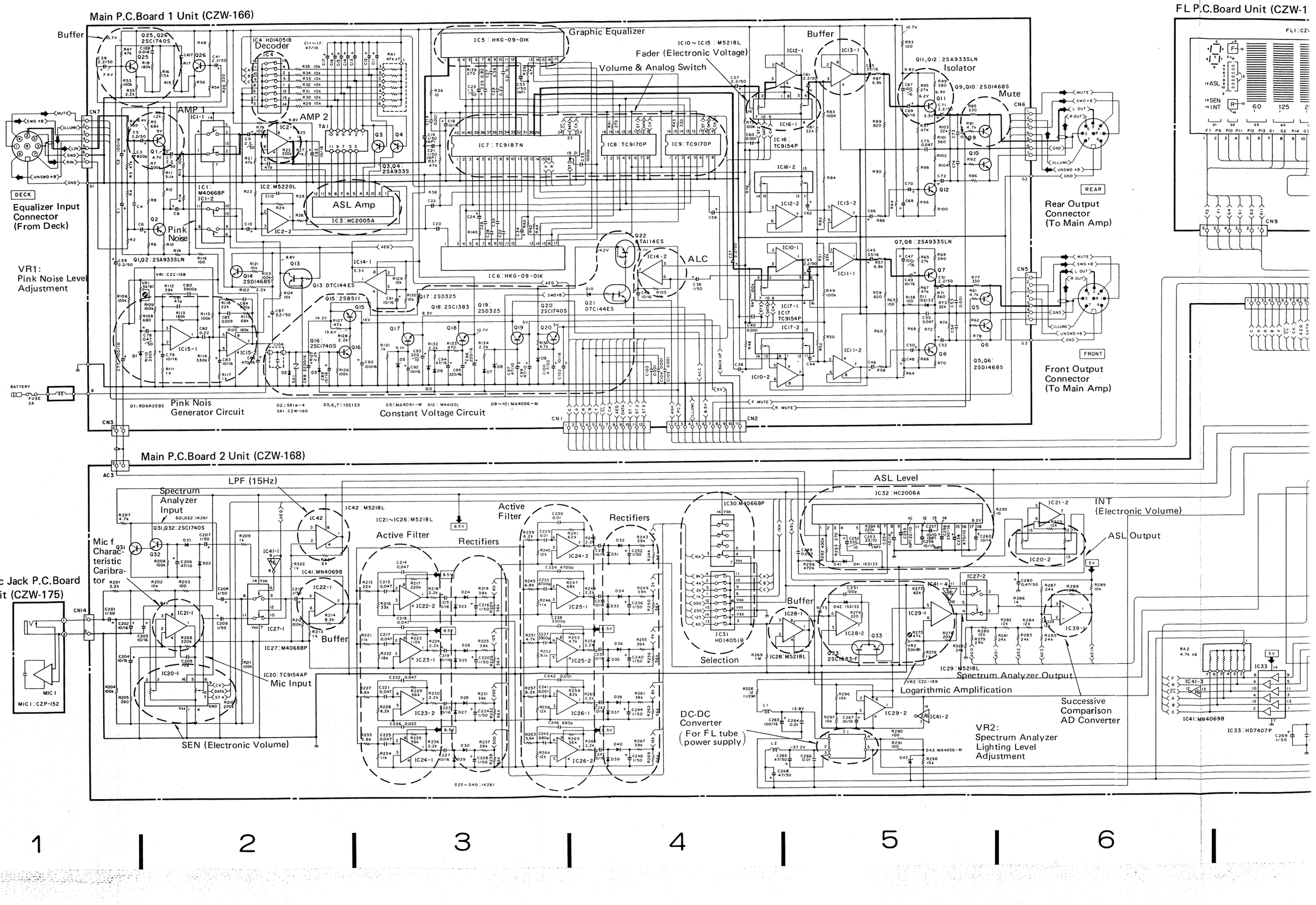


• Pin Function (HMCS404CS)

Pin	Pin name	I/O	Function and Operation
1	$\overline{\text{MUTE F}}$	Output	Front output mute output
2	D8	Output	FL tube indicator digit output
3	ORG	Output	Original LED light output. H: preset key original indicator LED lit.
4	$\overline{\text{MUTE R}}$	Output	Rear output mute
5	S0	Output	FL tube indicator segment output
6 ≀ 9	S9 ≀ S2		
10 ≀ 13	S5 ≀ S8		
14 ≀ 17	S1 ≀ S4		
18	A/D IN	Input	A/D conversion data input
19	VDISP	Input	Approx. −30 V input
20	F	Output	Front switch output
21	R	Output	Rear switch output
22	CL	Output	Front, rear both OFF
23	POWER DOWN	Input	Power cut detect
24 ≀ 27	A/D 0 ≀ A/D 3	Output	A/D conversion output

Pin	Pin name	I/O	Function and Operation
28 ≀ 30	ASL 0 ≀ ASL 2	Output	ASL level select
31	ASL	Output	ASL input select. H: ASL microphone input
32	Vcc		5V
33	$\overline{\text{SCK}}$	Output	Serial clock output
34	AEO	Output	Auto EQ select. H: pink noise generation
35	SO	Output	Serial out output
36	SL	Input	Small lights input
37 ≀ 40	BS 0 ≀ BS 3	Output	Analyzer input band select output
41	ST 1	Output	Strobe output, graphic equalizer volume IC7−9
42	ST 2	Output	Strobe output, rear fader volume IC16
43	ST 3	Output	Strobe output, front fader volume IC17
44	ST 4	Output	Strobe output, SENS, INTENS volume IC20
45 ≀ 48	$\overline{\text{KEY IN 0}}$ ≀ $\overline{\text{KEY IN 3}}$	Input	Key matrix input
49	RESET	Input	H: reset
50	TEST		Not used. Fixed at H
51	OSC 1		Resonator connection terminal
52	OSC 2		
53	GND		
54	$\overline{\text{D7}}$	Output	FL tube indicator digit output
55	$\overline{\text{D10}}$		
56	$\overline{\text{D9}}$		
57	BUZZER	Output	Key beep signal
58 ≀ 64	$\overline{\text{D0}}$ ≀ $\overline{\text{D6}}$	Output	FL tube indicator digit output

7. SCHEMATIC CIRCUIT DIAGRAM



FL P.C.Board Unit (CZW-170)

Switch P.C.Board Unit (CZW-173)

FL1:CZW-172

Illumi LED

Factory Preset Curve Mode Indicator LED

D101~D117:GL9PG44
D118~D123:GL9HS44

S01~S17:CZS-151

S21~S30:CZS-151

Illumi LED

D201~D210:GL9PG44

CN9 CN10 CN12 CN11 CN8 CN10 CN13

AC1 AC2 AC8 AC12 AC11 AC10 AC9

Q38 Q39 Q38,Q39:DTA114ES

IC39:NJM2903D

Q36:2SA933S

Reset Circuit

IC40-1 IC40-2 IC40-3 IC40-4

IC40:M4011BP

Q35 Q34 Q37 Q34,Q35,Q37:2SC1740S

SP1 CZP-151

D45 D44 D46

IC36:HMCS404CS

IC36

System Controller

IC33:HD7407P

IC34,IC35:HD7407P

IC41:MN4069B

IC37,IC38:MSL915RS

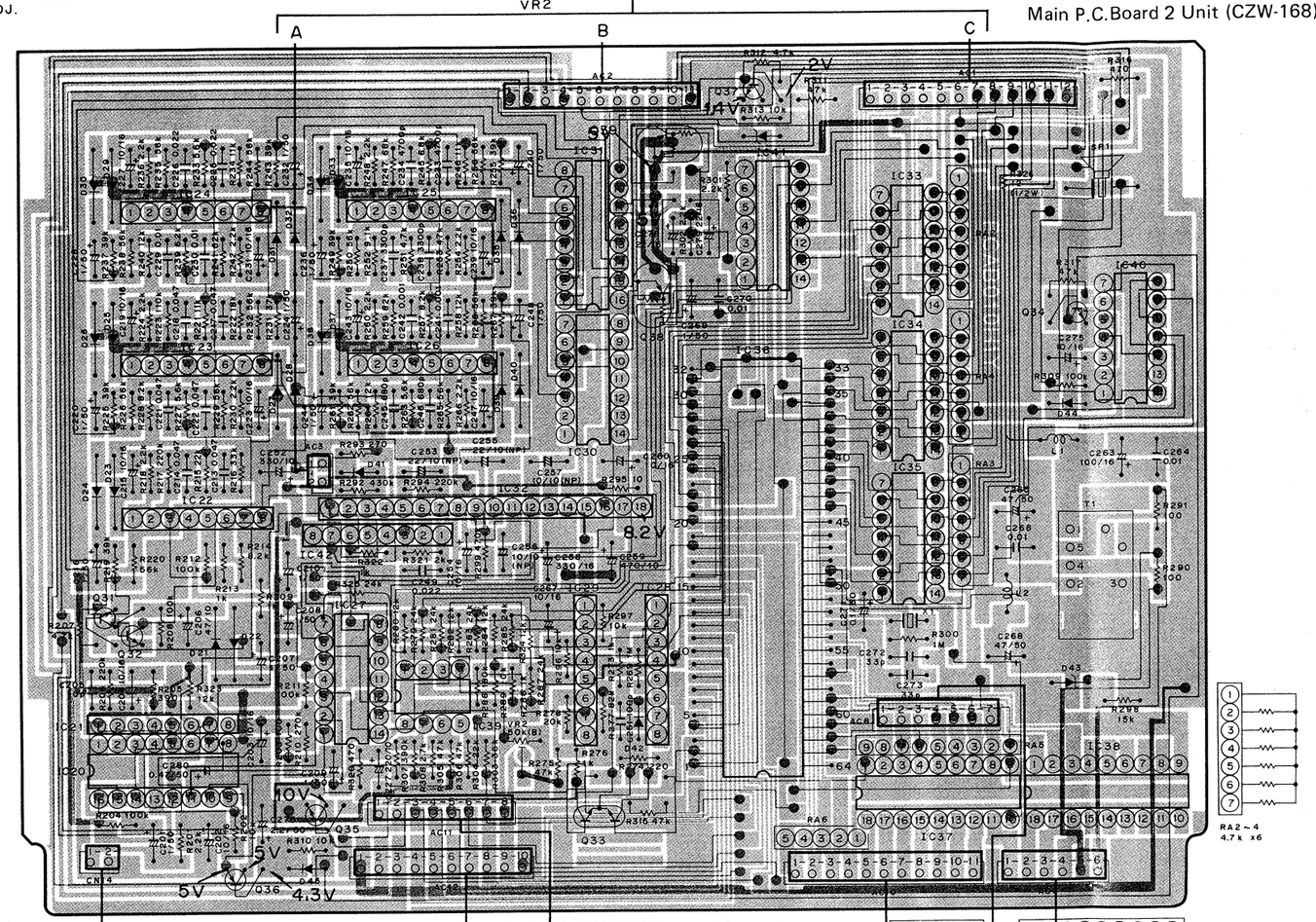
Grid Driver

The view of the connector is one seen from the mating connector.

Fig. 44

8. CONNECTION DIAGRAM

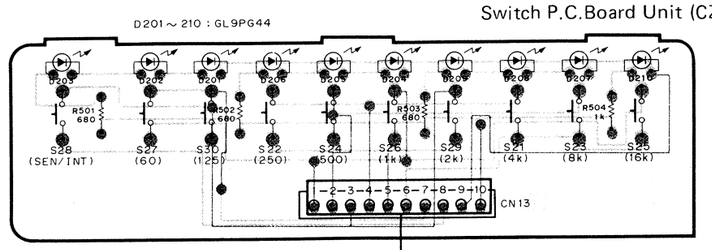
Main P.C.Board 2 Unit (CZW-168)



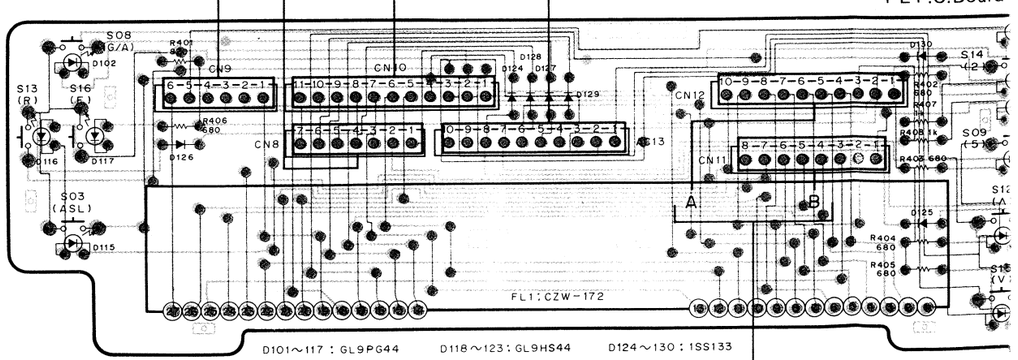
Main P.C.Board 2 Unit

IC21⑧ Pin	8.1V
IC22~26, 28, 29, 42⑧ Pin	8.5V
IC30⑭ Pin	8.5V
IC31⑯ Pin	8.5V
IC33~35⑭ Pin	5V
IC36㉜, ㊿ Pin	5V
IC37, 38⑩ Pin	5V
IC39⑤ Pin	5.4V
⑥ Pin	2.5V
⑦ Pin	4.9V
IC40⑭ Pin	5V

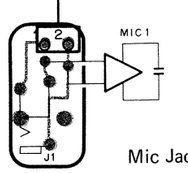
Switch P.C.Board Unit (CZW-173)



FL P.C.Board



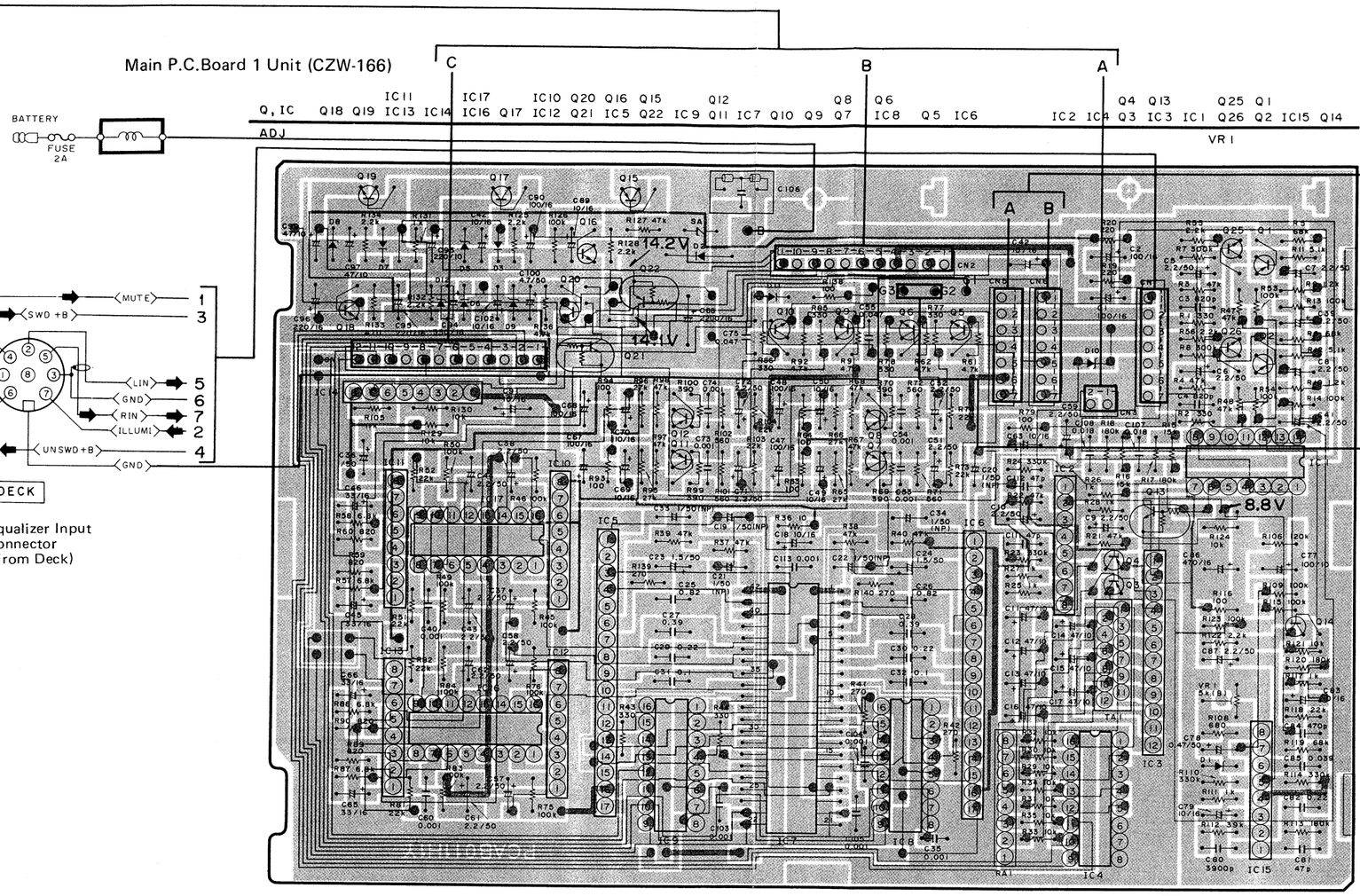
IC20 : TC9154AP
IC21~26, 28, 29, 42 : M5218L
IC27, 30 : M40666BP
IC31 : HD14051B
IC32 : HC2006A
IC33~35 : HD7407P
IC36 : HMCS404CS
IC37, 38 : MSL915RS
IC39 : NJM2903D
IC40 : M4011BP
IC41 : MN4069B
Q31, 32, 34, 35, 37 : 2SC1740S
Q33 : 2SC1583-F
Q36 : 2SA933S
Q38, 39 : DTA114ES
D21~40 : 1K261
D41, 42, 44, 45 : 1SS133
D43 : MA4056-M
D46 : MA4047-M



Mic Jack P.C.Board Unit (CZW-175)

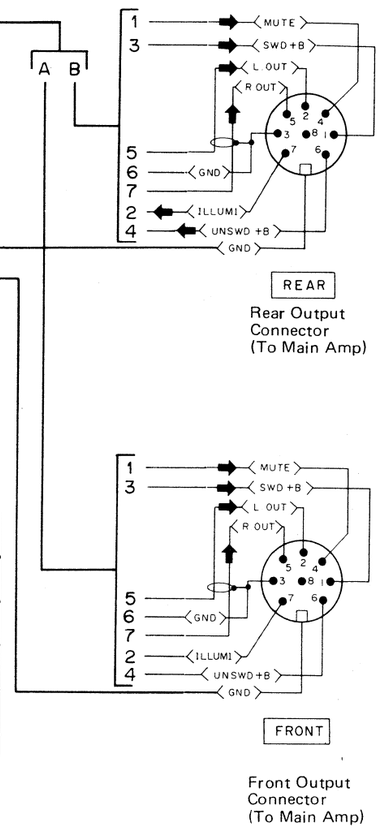
7 8 9 10 11 12

Main P.C.Board 1 Unit (CZW-166)



DECK

Equalizer Input
Connector
(From Deck)



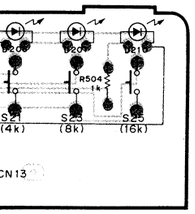
REAR

Rear Output
Connector
(To Main Amp)

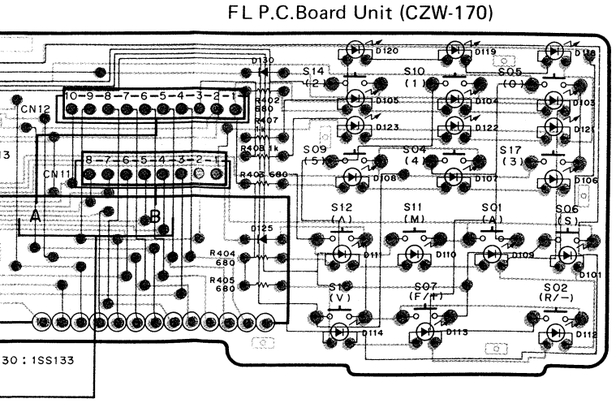
FRONT

Front Output
Connector
(To Main Amp)

Switch P.C.Board Unit (CZW-173)



FL P.C.Board Unit (CZW-170)



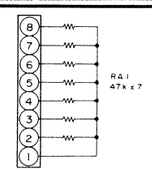
IC1 : M4066BP
IC2 : M5220L
IC3 : HC2005A
IC4 : HD14051B
IC5,6 : HKG-09-01K

IC7 : TC9187N
IC8,9 : TC9170P
IC10~15 : M5218L
IC16,17 : TC9154P

Q1,2,7,8,11,12 : 2SA933SLN
Q3,4 : 2SA933S
Q5,6,9,10,14 : 2SD1468S
Q13,21 : DTC144ES

Q15 : 2SB511
Q16,20,25,26 : 2SC1740S
Q17,19 : 2SD325
Q18 : 2SC1383
Q22 : DTA114ES

D1 : RD6R2EB2
D2 : SR1K-4
D3,6,7,11 : 1SS133
D5 : MA4091-M
D8~10 : MA4056-M
D12 : MA4120L



Main P.C.Board 1 Unit

	Q1	Q11	Q15	Q17	Q18	Q19	Q20	Q25
E	9	6.9	14.2	8.5	10.7	5	5	
C	4.7	3.3	14	14	14	14	14.2	10.7
B	8.4	6.2	13.6	9.1				7.4

(V)

IC1⑭ Pin	10.7V
IC2⑧ Pin	9.8V
IC4, 16, 17⑯ Pin	10.7V
IC10~14⑧ Pin	10.7V
IC14①, ② Pin	5.3V

Fig. 45

9. FRONT CABINET EXPLODED VIEW

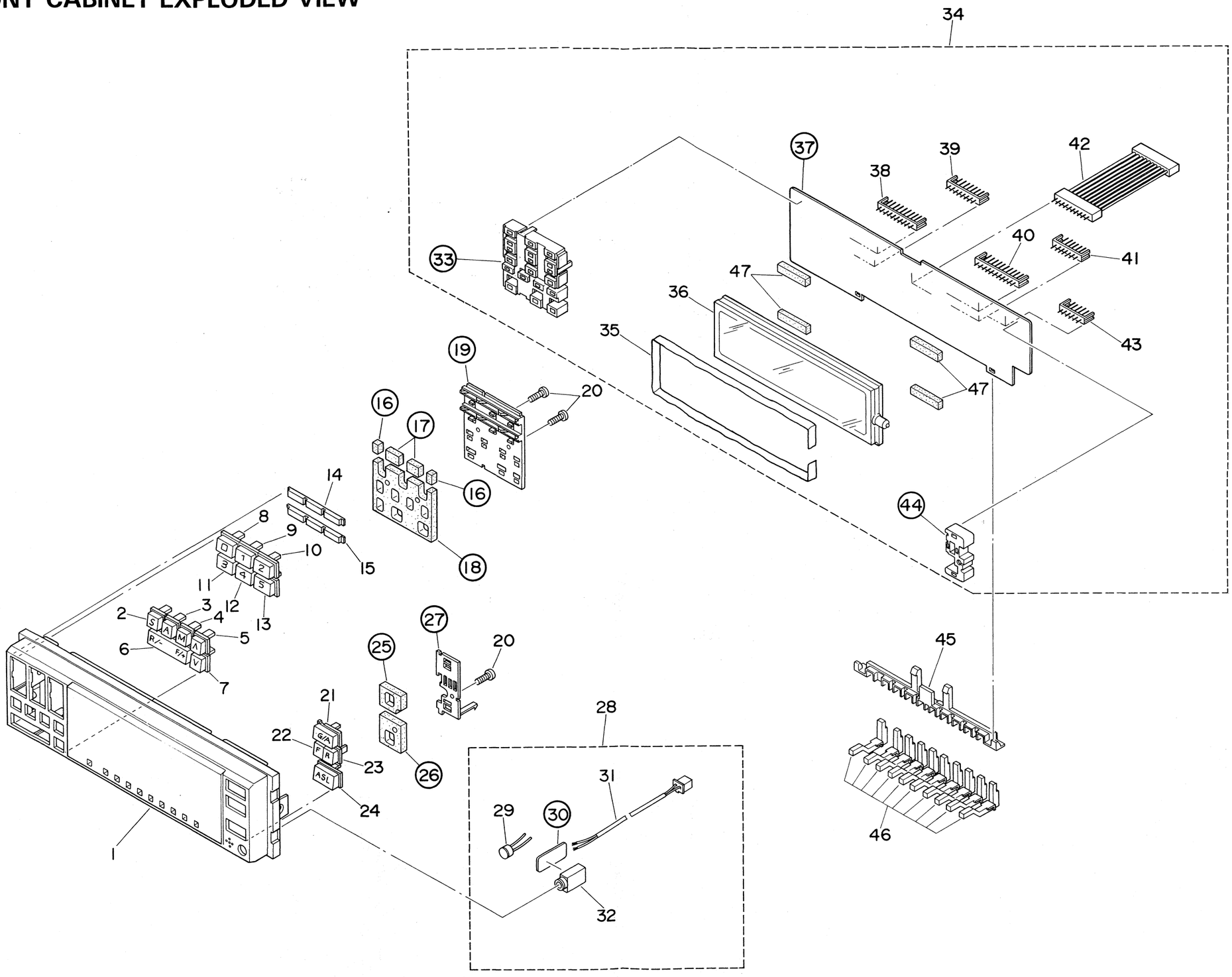


Fig. 46

- **Parts List**

NOTE:

- *For your Parts*
  ★ ★ and ★.
  ★ ★: GENEF
  This classifica
  number, temp
- *Parts whose p*

Mark	No.	Part
	1.	CZX
★	2.	CZA
★	3.	CZA
★	4.	CZA
★	5.	CZA
★	6.	CZA
★	7.	CZA
★	8.	CZA
★	9.	CZA
★	10.	CZA
★	11.	CZA
★	12.	CZA
★	13.	CZA
★	14.	CZN
	15.	CZN
	16.	
	17.	
	18.	
	19.	
	20.	PBZ
★	21.	CZA
★	22.	CZA
★	23.	CZA
★	24.	CZA
	25.	

• Parts List

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Mark	No.	Part No.	Description
	1.	CZX-157	Grille Unit
★	2.	CZA-175	Button (S)
★	3.	CZA-176	Button (A)
★	4.	CZA-177	Button (M)
★	5.	CZA-178	Button (UP)
★	6.	CZA-180	Button (D.A.BAL)
★	7.	CZA-179	Button (DOWN)
★	8.	CZA-160	Button (0)
★	9.	CZA-161	Button (1)
★	10.	CZA-162	Button (2)
★	11.	CZA-163	Button (3)
★	12.	CZA-164	Button (4)
★	13.	CZA-165	Button (5)
★	14.	CZN-189	Lens
	15.	CZN-190	Lens
	16.		Cushion
	17.		Cushion
	18.		Cushion
	19.		Knob Holder
	20.	PBZ14P060FMC	Screw
★	21.	CZA-182	Button (G/A)
★	22.	CZA-183	Button (F)
★	23.	CZA-184	Button (R)
★	24.	CZA-185	Button (ASL)
	25.		Cushion
	26.		Cushion
	27.		Knob Holder
	28.	CZW-175	Mic Jack P.C. Board Unit
	29.	CZP-152	Microphone
	30.		P.C. Board
	31.	CZD-158	Connector
	32.	CZK-158	Jack
	33.		Holder
	34.	CZW-170	FL P.C. Board Unit
	35.	CZN-191	Seal
	36.	CZW-172	FL Display
	37.		P.C. Board
	38.	CZK-156	Connector (CN12)
	39.	CZK-155	Connector (CN11)
	40.	CZK-157	Connector (CN10)
	41.	CZK-154	Connector (CN8)
	42.	CZD-157	Connector (AC13)
	43.	CZK-151	Connector (CN9)
	44.		Holder
	45.	CZN-181	Knob Holder
★	46.	CZA-181	Button
	47.	CZN-220	Spacer

10. CHASSIS EXPLODED VIEW

Mark	No.	Part No.	Description
	1.	CZB-151	Screw
	2.	CZN-219	Cover
	3.		Shield Plate
	4.	BMZ26P040FZN	Screw
	5.		Chassis Assy
	6.	BMZ30P100FZN	Screw
	7.	CZN-203	PCB Holder
	8.		Cushion
	9.	CZW-173	Switch P.C. Board Unit
	10.	CZN-200	Lower Cover
	11.	CMZ26P050FZN	Screw
	12.		Front Cabinet Assy
	13.	CZW-168	Main P.C. Board 2 Unit
	14.	CZN-178	Cap
	15.	CZD-167	Cord Assy (Input)
	16.	CZD-170	Cord Assy (Back Up)
	17.	CZD-169	Cord Assy (Rear Output)
	18.	CZD-168	Cord Assy (Front Output)
	19.	CZD-166	Connector (AC12)
	20.	CZD-165	Connector (AC11)
	21.	CZD-164	Connector (AC10)
	22.	CZD-163	Connector (AC9)
	23.	CZD-162	Connector (AC8)
	24.	CZD-160	Connector (AC2)
	25.	CZD-159	Connector (AC1)
	26.	CZD-161	Connector (AC3)
	27.		Bracket
	28.	CZW-166	Main P.C. Board 1 Unit
	29.	CZK-162	Connector (CN3)
	30.	CZK-152	Connector (CN5—7)
	31.	CZK-160	Connector (CN2)
	32.	CZK-159	Connector (CN1)
	33.	PZR35Z055ND	Screw
	34.		Heat Sink
	35.		Sheet
★★	36.	2SB511	Transistor
★★	37.	2SD325	Transistor
	38.		Bracket
	39.		Spacer
	40.	BMZ30P060FZN	Screw
	41.	WH30FZN	Washer
	42.		P.C. Board
	43.	CZK-156	Connector (CN13)
★★	44.	CZS-151	Switch
★	45.	GL9PG44	LED
	46.	CZK-161	Connector (CN14)

• **Chassis**

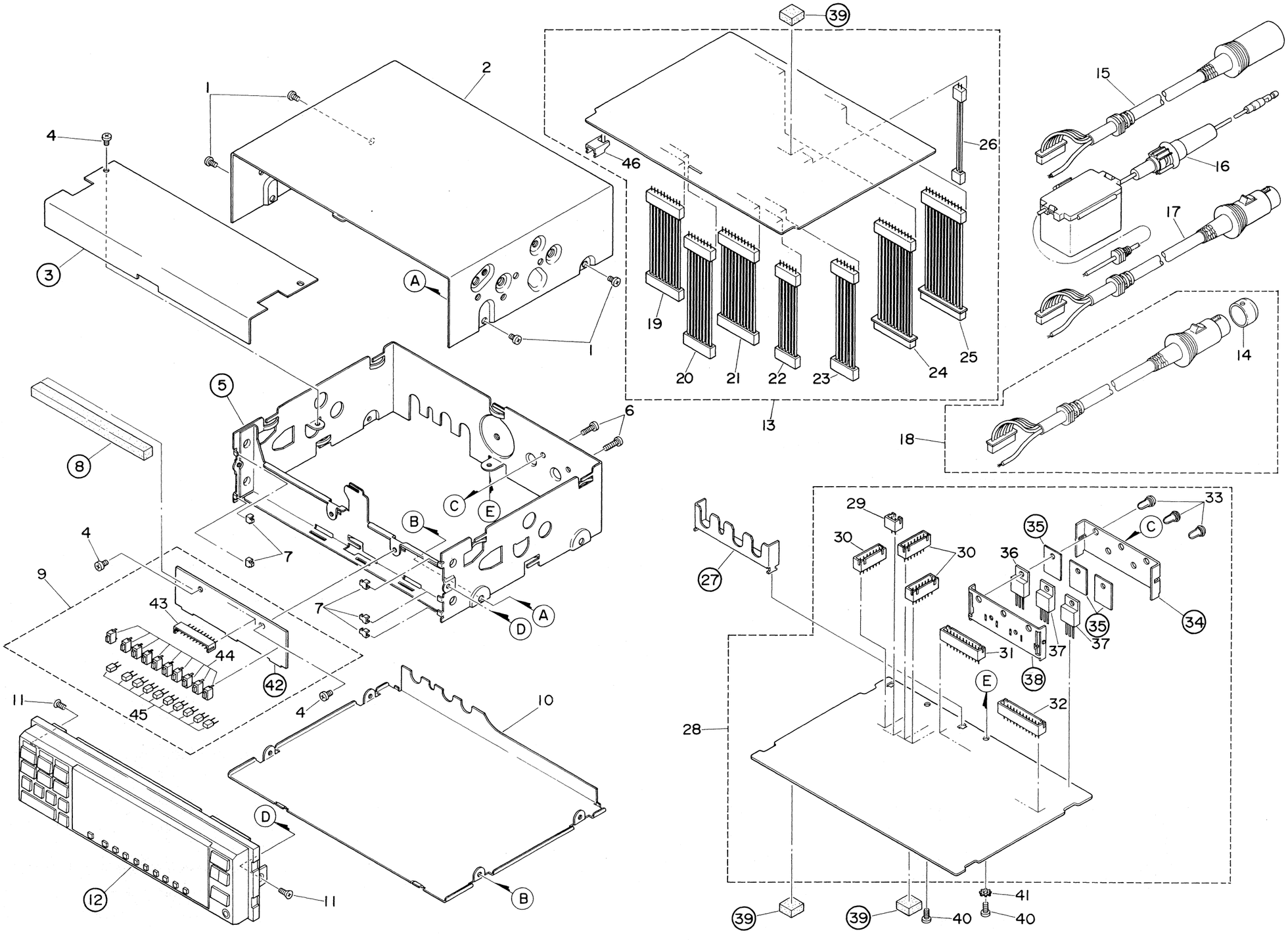


Fig. 47

11. ELECTRICAL PARTS LIST

NOTE:

When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*RN1/4SR 5 6 2 1 F*

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Main P.C. Board 1 Unit (CZW-166)

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1		M4066BP
★★	IC2		M5220L
★★	IC3		HC2005A
★★	IC4		HD14051B
★★	IC5, 6		HKG-09-01K
★★	IC7		TC9187N
★★	IC8, 9		TC9170P
★★	IC10 — 15		M5218L
★★	IC16, 17		TC9154P
★★	Q1, 2, 7, 8, 11, 12		2SA933SLN
★★	Q3, 4		2SA933S
★★	Q5, 6, 9, 10, 14		2SD1468S
★★	Q13, 21		DTC144ES
★★	Q15		2SB511
★★	Q16, 20, 25, 26		2SC1740S
★★	Q17, 19		2SD325
★★	Q18		2SC1383
★★	Q22		DTA114ES
★	D1		RD6R2EB2
★	D2		SR1K-4
★	D3, 6, 7, 11		1S133
★	D5		MA4091-M
★	D8 — 10		MA4056-M
★	D12		MA4120L
	TA1	Transistor Array	TA57
	RA1	Resistor Array	CZW-176
★	SA1	Surge Absorber	CZW-160
★★	VR1	Semi-fixed, 5 kΩ(B)	CZC-158

RESISTORS

Mark	Symbol & Description	Part No.
	All Resistors	RD1/4□□□J

CAPACITORS

Mark	Symbol & Description	Part No.
	C1, 2, 47, 48, 67, 68, 90	CEA101M16
	C3, 4	CKDYB821K50
	C5 — 10, 37 — 39	CEA2R2M50
	C11 — 17	CEA470M10
	C18, 42, 49, 50, 63, 69, 70	CEA100M16
	C19 — 22, 33, 34	CEA010M50NP
	C23, 24	CEA1R5M50
	C25, 26	CQFA824J50L
	C27, 28	CQFA394J50L
	C29, 30, 82	CQFA224J50L
	C31, 32	CQFA104J50L
	C35, 40, 53, 54, 60, 73, 74, 103 — 105, 113	CKDYB102K50
	C36	CEA010M50
	C41, 43, 44, 51, 52, 57 — 59, 61, 62, 71, 72, 87	CEA2R2M50
	C45, 46, 65, 66	CEA330M16
	C55, 75	CQFA473J50L
	C77	CEA101M10
	C78	CEAR47M50
	C79, 83, 89, 91, 92, 102	CEA100M16
	C80	CQFA392J50L
	C81, 111, 112	CCDSL470K50
	C84	CKDYB471K50
	C85	CQFA393J50L
	C86	CEA471M16

Mark	Symbol & Description		Part No.
	C88	2200μF/16V	CZC-152
	C93		CEA221M10
	C94		CEA331M16L2
	C95, 96		CEA221M16
	C97, 99		CEA470M16
	C100		CEA4R7M50
	C106		CZC-153
	C107, 108		CQFA183J50L

Main P.C. Board 2 Unit (CZW-168)

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC20		TC9154AP
★★	IC21 — 26, 28, 29, 42		M5218L
★★	IC27, 30		M4066BP
★★	IC31		HD14051B
★★	IC32		HC2006A
★★	IC33 — 35		HD7407P
★★	IC36		HMCS404CS
★★	IC37, 38		MSL915RS
★★	IC39		NJM2903D
★★	IC40		M4011BP
★★	IC41		MN4069B
★★	Q31, 32, 34, 35, 37		2SC1740S
★★	Q33		2SC1583-F
★★	Q36		2SA933S
★★	Q38, 39		DTA114ES
★	D21 — 40		1K261
★	D41, 42, 44, 45		1SS133
★	D43		MA4056-M
★	D46		MA4047-M
	L1	Coil	CZT-153
	L2	Coil	CZT-154
	T1	DC-DC Converter	CZW-180
	RA2 — 4	Resistor Array	CZW-177
	RA5	Resistor Array	CZW-178
	RA6	Resistor Array	CZW-179
	X1	Ceramic Oscillator	CZS-152
	SP1	Buzzer	CZP-151
★★	VR2	Semi-fixed, 50 kΩ(B)	CZC-159

RESISTORS

Mark	Symbol & Description	Part No.
	R326	RS1/2P□□□J
	Other Resistors	RD1/4PS□□□J

CAPACITORS

Mark	Symbol & Description	Part No.
	C201, 240, 244, 248, 269	CEA010M50
	C202 — 204, 215, 219, 223, 227, 231, 235, 239, 243, 247, 254, 260, 267, 275	CEA100M16
	C205	CCDCH100D50
	C206	CEA470M10
	C207 — 210, 216, 220, 224, 228, 232, 236	CEA010M50
	C213, 214, 217, 218, 221, 222	CQFA473J50L
	C225, 226, 249	CQFA223J50L
	C229, 230, 264, 266, 270	CQFA103J50L
	C233, 234	CQFA472J50L
	C237, 238	CQFA332J50L
	C241, 242	CQFA102J50L
	C245, 246	CKDYB681K50
	C251	CCDCH101J50
	C252	CEA331M10
	C253, 255	CEA220M10NP
	C256, 257	CEA100M10NP
	C258	CEA331M16
	C259	CEA471M6R3
	C263	CEA101M16
	C265, 268	CEA470M50
	C271	CEA0R1M50
	C272, 273	CCDCH330J50
	C276	CEA2R2M50
	C277	CEA221M10
	C278, 279	CEA220M16
	C280	CEAR47M50LS

FL P.C. Board Unit (CZW-170)

Mark	Symbol & Description		Part No.
★	D101 — 117	LED	GL9PG44
★	D118 — 123	LED	GL9HS44
★	D124 — 130		1SS133
★★	S01 — 17	Switch	CZS-151
★	FL1	FL Display	CZW-172
	R401 — 408		RD1/4PS□□□J

Switch P.C. Board Unit (CZW-173)

Mark	Symbol & Description		Part No.
★	D201 — 210	LED	GL9PG44
★★	S21 — 30	Switch	CZS-151
	R501 — 504		RD1/4PS□□□J

Miscrophone Jack P.C. Board Unit (CZW-175)

Mark	Symbol & Description		Part No.
	MIC1	Microphone	CZP-152

12. PACKING METHOD

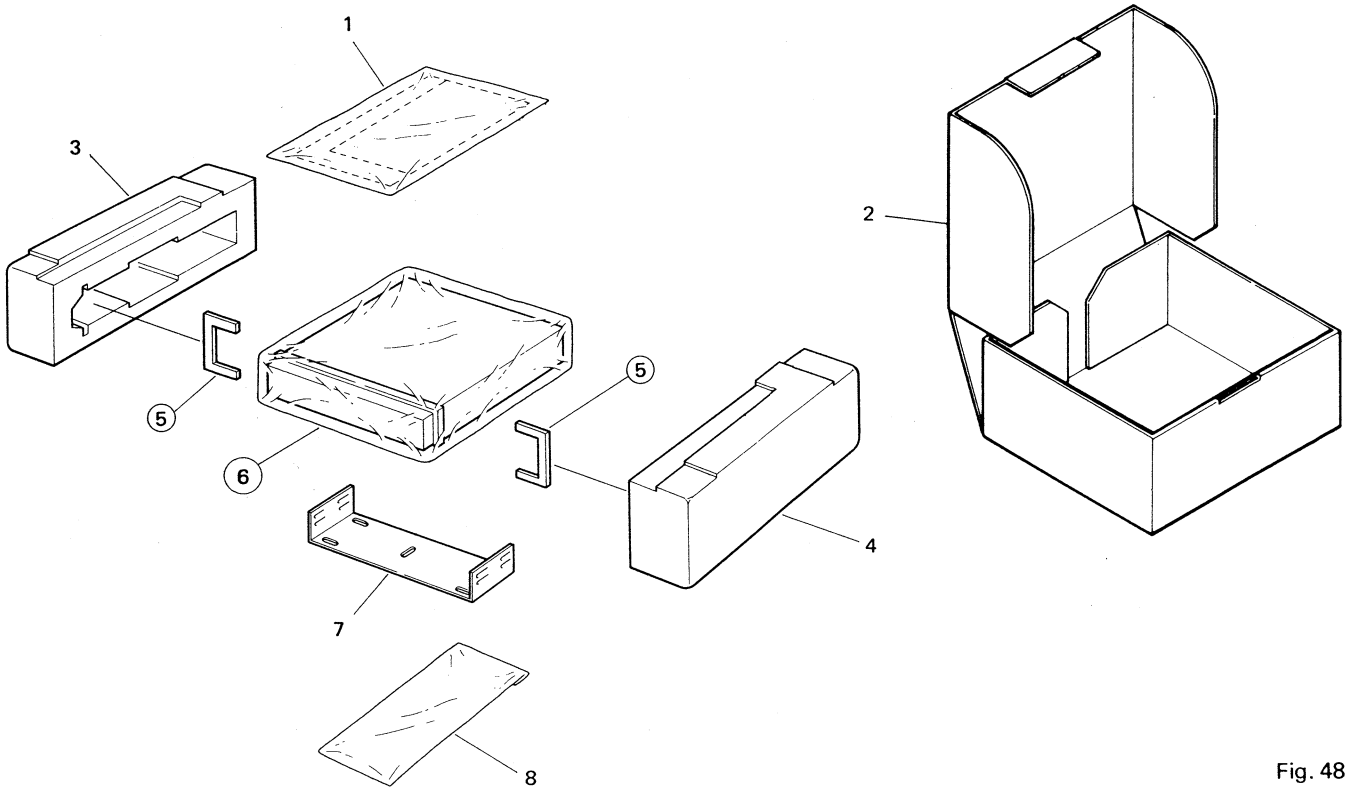


Fig. 48

• Parts List

Mark	No.	Part No.	Description
	1.	CZR-163	Owner's Manual (EQ-505/EW) (Swedish, Norwegian, Dutch, Italian)
		CZR-166	Owner's Manual (EQ-505/EW,ES) (English, French, German, Spanish)
		CZR-164	Owner's Manual (EQ-505/ES) (Arabic)
			Card (EQ-505/EW)
	2.	CZH-167	Carton (EQ-505/EW)
		CZH-169	Carton (EQ-505/ES)
	3.	CZH-170	Styrofoam
	4.	CZH-170	Styrofoam
	5.		Spacer
	6.		Cover
	7.	CNB-723	Mounting Bracket

Mark	No.	Part No.	Description
	8.	CZE-157	Accessory Assy
	8-1.	CNF-111	Strap
	8-2.	CDE-437	Cord
	8-3.	CDE-393	Connector (Battery Wire)
	8-4.	CEB-150	Microphone Assy
	8-5.		Screw Kit
	8-5-1.	B20-013-A	Spring Washer
	8-5-2.	B70-055-A	Nut
	8-5-3.	B70-056-A	Nut
	8-5-4.	CBA-028	Screw for Strap
	8-5-5.	CBA-102	Screw
	8-5-6.		Double-sided Seal
	8-5-7.	CNN-058	Spacer
	8-5-8.	HMF40P080FZK	Screw